

**CONTRACT DOCUMENTS
AND
SPECIFICATIONS
FOR
NORTH LAKESHORE DRIVE RECONSTRUCTION
FOR THE CITY OF ROCKWALL, TEXAS
PUBLIC WORKS DEPARTMENT
ENGINEERING DIVISION
CIP 2024-002**



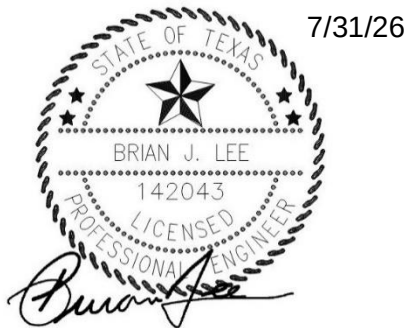
City of Rockwall
The New Horizon

Prepared by:

**KIMLEY-HORN AND ASSOCIATES, INC.
225 E. John W. Carpenter Freeway
Irving, TX 75062
214-420-5600
Texas Registered Engineering Firm # F-928**

JULY 2026

The Engineer's seal and signature applies to the all documents herein not specifically selected by sealed and signature shown below:



The Engineer's seal and signature appearing on this sheet applies to the following:

Bid Item Clarifications:

Schedule F – Traffic Signal



TABLE OF CONTENTS

TENTATIVE SCHEDULE	Page 4
ADVERTISEMENT FOR BIDS	Page 6
PROPOSAL REQUIREMENTS	Page 7
INSTRUCTIONS TO PROPOSERS	Page 8
STANDARDS OF CONDUCT	Page 17
BID SUBMITTAL	
PROPOSAL	Page 19
BID FORM	Page 20
DISADVANTAGED BUSINESS ENTERPRISE (DBE) INFORMATION	Page 40
NON-EXCLUSION AFFIDAVIT - SYSTEM FOR AWARD MANAGEMENT (SAM).....	Page 41
NON-COLLUSION STATEMENT	Page 43
CONFLICT OF INTEREST QUESTIONNAIRE	Page 44
BID BOND	Page 46
CONTRACT AND BOND FORMS.....	Page 47
CONTRACT	Page 48
PERFORMANCE BOND	Page 53
PAYMENT BOND	Page 55
MAINTENANCE BOND.....	Page 57
CONTRACTOR'S AFFIDAVIT OF FINAL PAYMENT AND RELEASE	Page 59
CERTIFICATE OF INTERESTED PARTIES FORM 1295.....	Page 60
CONTRACT CONSTRUCTION STANDARDS	Page 61
CITY OF ROCKWALL ADDENDUM TO STANDARDS SPECIFICATIONS	Page 62
CITY OF ROCKWALL ADDENDUM TO STANDARD DRAWINGS.....	Page 121
SPECIAL CONDITIONS.....	Page 180
BID ITEM DESCRIPTIONS.....	Page 191
TECHNICAL SPECIFICATIONS	Page 211
APPENDIX.....	Page 272



SCHEDULE FOR NORTH LAKESHORE DRIVE RECONSTRUCTION CIP 2024-002

1 st Public Advertisement	Friday, July 31, 2026
2 nd Public Advertisement	Friday, August 7, 2026
Mandatory Pre-Bid Conference	2:00 p.m., August 18, 2026
Question Deadline	August 20, 2026
Final Addendum Issued	August 24, 2026
Open Bids	2:00 p.m., August 27, 2026
*Council Awards Contract	October 5, 2026
Start Construction	December 7, 2026

Construction Completion **June 9, 2028 - December 6, 2028**
(550 - 730 Calendar Day Contract)

***City Council award date assumes no bidding irregularities or other issues with the competitive sealed process review.**



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ADVERTISEMENT FOR BIDS
Bid No. CIP 2024-002

Sealed competitive bids or proposals as set forth and required in the plans and specifications (either of which shall hereinafter be referred to as the "Bid") addressed to the Mayor and City Council of the City of Rockwall, Texas will be received at the office of the Public Works Department - Engineering Division at 385 S. Goliad, City Hall, 1st Floor, Rockwall, Texas 75087 until **2:00 p.m. on Thursday, August 27, 2026**, for the following project:

NORTH LAKESHORE DRIVE RECONSTRUCTION

As set forth in the plans and specifications, the project is designed to reconstruct N Lakeshore Drive from SH 66 to Masters Boulevard. Reconstruction will include approximately 61,000 square yards of roadway concrete pavement, 2,800 square yards of alley/driveway concrete pavement, 12,000 linear feet of sidewalk, 11,000 linear feet of storm drain (18-inch dia. to 60-inch dia., 5-ft x 2 ft RCB, 5-ft x 3-ft RCB, and 6-ft x 3-ft RCB), 1,100 linear feet of sanitary sewer (8-inch dia.), replacement of parkway landscaping, traffic signal modifications, traffic control and maintenance.

Bids will be opened and publicly read at 2:00 p.m. on Thursday, August 27, 2026, at the City of Rockwall, City Hall located at 385 S. Goliad, City Hall, 2nd Floor, Rockwall, Texas 75087, in the Council Chambers Conference Room.

A mandatory pre-bid conference will be held at 2:00 p.m. on Tuesday, August 18, 2026. The mandatory pre-bid conference will be held via teleconference at 469-250-9294, Conference ID: 705 225 901#

Instructions to Proposers, proposal forms, plans and specifications (the "Bid Documents") may be obtained from the (Consultant Office) – Kimley-Horn and Associates, Inc., 225 E. John W. Carpenter Freeway, Ste. 1100, Irving, Texas 75062 beginning **August 3, 2026**, upon a non-refundable payment of one hundred dollars (\$100.00) per set.

Advertisement and bid information can also be found at the following website: <http://www.civcastusa.com>

The Bid shall be submitted on the form provided in the Bid Documents.

Proposer must submit, with their Bid, a Cashier's check, Certified check or a Bid Bond from an approved surety company, in the amount of five percent (5%) of their Bid as a guarantee that the Bidder will enter into a contract and guarantee forms, if required, within 10 days after notice of award of contract.

The successful proposer must furnish Performance Bond and Payment Bond, each in the amount of 100 percent (100%) of the contract price, from an approved Surety company holding a permit from the State of Texas to act as surety, and acceptable according to the latest list of companies holding Certificates of Authority from the Secretary of the Treasury of the United States, or another Surety acceptable to the City. A ten percent (10%) Maintenance Bond (2-year) is required for this project

The right is reserved, as the interest of the City of Rockwall may require, to reject any and all bids, to waive any informality in the bids received, and to select the bid best suited to the City of Rockwall's best interest. The successful contractor must have completed a minimum of five (5) similar projects within the last ten (10) years.

CITY OF ROCKWALL, TEXAS

August 7, 2026

CIP 2024-002

Publish: July 31, 2026



PROPOSAL REQUIREMENTS

One (1) copy of the Proposal shall be submitted no later than the date and time prescribed and at the place indicated in the advertisement and shall be enclosed in an opaque sealed envelope plainly marked with the Project Title, acknowledgement of any addendums, and the name and address of the Proposer, and shall be accompanied by the security and other required documents in the same order in which they are set forth below including the following items:

1. A cover letter signed by owner or corporate officer, expressing the Proposer's intent to provide equipment and services are required herein.
2. A completed Bid Schedule.
3. A complete Contractor Questionnaire including required attachments, references, sub-contractors, and financial statements, as required.
4. Conflict of Interest Questionnaire.
5. Bid Bond or a Certified or Cashier's check.

Any proposal submission that lacks any of the components listed above will not constitute a Proposal, will not be evaluated, and will not be eligible for contract award.

Proposal Ranking Procedures

The City of Rockwall shall use the following procedures as authorized in Government Code Chapter 2269 – Sub-Chapter D to evaluate Competitive Sealed Proposals:

1. The City Engineer, or their designee, shall convene a Proposal Evaluation Committee (the Committee) for this project utilizing the Competitive Sealed Proposal method of procurement. The Committee shall evaluate all submittals that are deemed Proposals and shall rank the Proposals in priority for negotiations.
2. The Committee shall use the following procedures to evaluate the Proposals:
 - a. Following the public opening of Proposals, the Committee shall meet to conduct a preliminary examination of each Proposal for compliance with the published requirements.
 - b. The Committee shall conduct thorough evaluations of all Proposals, and, if necessary, conduct interviews in person with the top ranked Proposers by the Committee. Selected Proposers will be notified of the date, time, and location of any interviews.
 - c. Within thirty (30) days after publicly opening the Proposals, the Committee shall produce a ranking of Proposers in the order of the Best Value to the Owner.
 - d. The Committee will base its recommended ranking on the information provided in the Proposals, including but not limited to the information submitted as instructed in the Contractor Questionnaire, proposal evaluation process score, any reference checks conducted, interviews conducted, and from prior City and/or City staff experience with Proposer.

INSTRUCTIONS TO PROPOSERS

1. If you have questions regarding the preparation of your bid, you may contact Misty Farris, Purchasing Agent, City of Rockwall, email: mfarris@rockwall.com. For technical questions **send an email to Amy Williams, City Engineer, awilliams@rockwall.com and Brian Lee, Kimley-Horn and Associates, Project Manager, brian.lee@kimley-horn.com** with the consulting engineer.
2. Any reference to the "Proposer" shall be construed as a reference to the "Bidder", and vice versa.
3. Mailed bids must be submitted in sufficient time to be received and time-stamped at the location in the advertisement on or before the published date and time shown on the Advertisement for Bids. The City of Rockwall is not responsible for mail delivered from the post office. Bids received after the published date and time will not be considered and will be returned unopened.
4. The Contractor shall at all times observe and comply with all Federal, State and local laws, ordinances and regulations which in any manner affect the Contract or the work, and shall indemnify and save harmless the City against any claim arising from the violation of any such laws, ordinances and regulations whether by the Contractor or his employees.
5. Proposer shall at all times observe and comply with all Federal, State, and local laws, ordinances and regulations including all amendments and revisions thereto, which in any manner affect Proposer or the services and/or items to be provided, specifically and not limited to any laws relating to conflicts of interest. In particular, Proposer is put on notice that City will require compliance with Chapter 176 of the Texas Local Government Code (hereinafter referred to as the "Act") requiring any person who contracts or seeks to contract with the City to disclose potential conflicts of interest as defined in the Act by completing the Conflict of Interest Questionnaire included in this bid proposal and returning it to the City on accordance with the provision of the Act. Failure to comply with any applicable laws, including the provision of the Act, may result in: i) the forfeiture by Proposer of all benefits of the Contract; ii) the retainage by City of all services performed by Proposer and iii) the recovery by City of all consideration, or the value of all consideration, paid to Proposer pursuant to any awarded contract.
6. Prices shall be filled in and extended on the bid sheets. In case of discrepancy between unit price and the extension, the unit price will govern. In case of a discrepancy between unit bid price in words and unit bid price in figures the unit bid price in words will govern. No other electronic forms will be accepted. A hard copy printout is required with the bid.
7. Proposer shall complete all information requested and blanks provided shall be filled in beside or under each bid item. Failure to completely describe the item being bid may result in rejection of the bid.
8. Prices quoted in the bid shall prevail for the entire term of the contract.
9. Any ambiguity in the bid as a result of omission, error, lack of clarity or non-compliance by the Proposer with specifications, instructions and all conditions shall be construed in favor of the City.



10. The Contract, Performance Bond and Payment Bond forms are included for Proposers information so that Proposers may be familiar with their contents and requirements.

Proposer shall not fill in or execute these forms at time of bid submittal.

11. All PROPOSERS must submit **with the bid**, a Bid Bond provided herein, Cashier's Check or Certified Check in the amount of 5% of the total bid per General Provision Section 102.5. No Proposal shall be considered unless it is accompanied by a Bid Bond, payable unconditionally to the City of Rockwall. The proposal guaranty is required by the City of Rockwall as evidence of good faith and as a guarantee that if awarded the Contract, the Proposer shall execute the Contract and furnish the required bonds and evidence of insurance within ten (10) days after receipt of the awarded Contract or pay the damages set forth below. The Proposer's surety bond shall be conditioned that, if the proposal is withdrawn after the proposals have been opened or the Contractor refuses to execute the Contract in accordance with its proposal and provide the required surety bonds, the Contractor and the surety shall become liable to the City of Rockwall for the amount of the Proposer's surety bond.

In the event the Cashier's Check or Certified Check is submitted along with the proposal, and the Proposer does not execute the Contract and provide the required surety bonds and evidence of insurance within ten (10) days after receipt of the awarded Contract, or withdraws its proposal after proposals have been opened, the City of Rockwall shall be entitled to the proceeds of such check.

12. Proposers shall complete the non-collusion statement included in the bid.
13. Proposer wanting further information, interpretation, or clarification of the Contract Documents must make their request to the City of Rockwall via civcastusa.com, prior to **August 20, 2026 at 5:00 pm**. Interpretations or clarifications considered necessary in response to such questions will be posted on civcastusa.com and issued by Addenda. Any Addenda issued will be published to civcastusa.com. Only questions answered by Addenda will be binding. Proposer shall promptly give the City of Rockwall written notice of all conflicts, errors, ambiguities, or discrepancies that Proposer discovers in the Proposal Documents and confirm that the written resolution thereof by the City of Rockwall is acceptable to the Proposer.

Any Addenda issued will be published to civcastusa.com for review and downloaded by the Proposer. The bid schedule as submitted by the Proposer must be so constructed to include any Addenda issued by the City of Rockwall prior to three (3) days of the opening of proposals, with the appropriate recognition of addenda so noted on the bid schedule. No Addenda will be issued within three (3) days of the proposal opening.

14. Qualifications of Proposers

To demonstrate Proposer's qualifications to perform the work associated with the Project, Proposers (or prospective subcontractors) interested in performing the associated work shall submit the following items to the City as part of the Proposal:

- a) Evaluation Criteria A
Completed Bid Schedule
- b) Evaluation Criteria B
Contractor shall provide relevant work experience on the attached form (see attached



SOQ Form). The relevant work experience shall include the following:

- Contractor shall provide details of five (5) projects completed within the last ten (10) years.
- The projects should consist of reconstruction or major expansion of an existing arterial road, including general paving, drainage, and pedestrian improvement work.
- Total construction cost for each project should be a minimum \$20 million dollars.

c) Evaluation Criteria C

To demonstrate knowledge and experience with local conditions, regulations, and coordination with applicable agencies, the Contractor shall provide project location on the attached form (see attached SOQ Form).

Project location information shall include:

- Street/Highway Name and Limits (i.e. Street A to Street B)
- City, County, State (including zip code)

d) Evaluation Criteria D

To demonstrate schedule performance and delivery, the Contractor shall provide dates on the attached form (see attached SOQ Form 1) for the following:

- Notice to Proceed
- Contract substantial completion date at Notice to Proceed
- Contract final completion date at Notice to Proceed
- Actual/estimated substantial completion date
- Actual/estimated final completion date

Contractor to include project references on the attached form (see attached SOQ Form).

e) Evaluation Criteria E

Safety Record and Safety Experience:

In order to consider the safety records of potential contractors prior to awarding bids on City contracts, the City requires that Proposers answer the following questions and submit them with the bid package.

Proposer shall compile the requested information and provide to Owner in an organized manner including page reference tabs and other indexing measures to permit expeditious review by the Evaluation Committee.

Failure to fully complete the forms may render the submission incomplete or non-responsive.

15. Proposers can withdraw or modify their proposal prior to the time set for opening proposals. The proposal may not be withdrawn after the proposal opening has commenced. Requests for non-consideration of proposals must be made in writing and addressed to the City of Rockwall prior to the time set for opening proposals. After other proposals are opened and publicly read, the proposal for which non-consideration is properly requested will be returned unopened. The Proposer warrants and represent that its proposal has been carefully reviewed and checked that it is in all things true and accurate and free of mistakes and that such proposal shall not and cannot be withdrawn after opening because of any mistake committed by the Proposer; provided, however, that any Proposer may withdraw their proposal ninety (90) days after the actual date of opening thereof, should no award have been made to such Proposer.



16. Proposals filed with the City of Rockwall shall be opened at the time stated in the advertisement and/or any subsequently issued addendum, and publicly read aloud, and shall thereafter remain on file with the City of Rockwall.

After proposals are opened, the bid schedule shall be tabulated for comparison on the basis of bid prices and quantities shown in the bid schedule. The proposals will be evaluated by the Evaluation Committee in accordance with the process outlined in the Proposal Evaluation Process.

17. Proposals shall be considered irregular if they show any omissions, alterations of form, additions, unbalanced values or conditions not called for, unauthorized alternate proposals or other irregularities of any kind. The City of Rockwall may reject any proposal containing any such irregularities. The City of Rockwall, however, reserves the right to waive any irregularities and to make the award in the best interest of the City.
18. Until final award of the Contract, the City of Rockwall reserves the right to reject any and all bids, waive formalities and to make award of bid. Proposals may be rejected for any of the following specific reasons:
 - a. Proposals received after the time limit for receiving proposals as stated in the advertisement or any subsequently issued addendum;
 - b. Proposals unaccompanied by the required bid security;
 - c. Proposals constituting a nonresponsive proposal;
 - d. Proposals containing unsolicited conditions or qualifications;
 - e. Failure to use the City of Rockwall's form of bid bond in submitting proposals; or
 - f. A proposal submitted with a bid bond issued by a surplus line company or by a surety not licensed to transact insurance business in the State of Texas.
19. The City of Rockwall reserves the right to disqualify proposers and their proposals not considered for any of the following specific reasons:
 - a. Reasonable belief that collusion exists among the Proposers;
 - b. Reasonable belief that any Proposer has a financial interest in more than one proposal for the Work contemplated;
 - c. The Proposer having a history of filing frequent, excessive and meritless claims, or fraudulent claims, against the City, or against other contractors on a project of the City;
 - d. The Proposer or its surety having defaulted on a previous Contract, or the Proposer performing poorly on a previous Contract;
 - e. Lack of competency, skill, judgement, financial capability, integrity, reputation, reliability, or responsibility to perform the Work as revealed by the bid schedule, contractor questionnaire, financial statement, performance history or other relevant information obtained by the City;
 - f. Uncompleted Work with in the judgement of the City shall prevent or hinder the prompt completion of additional Work if awarded;
 - g. Failure of Proposer to use City of Rockwall's form of bid bond in submitting its proposal, or submission of a Cashier's Check or Certified Check drawn on a state or national bank not located in the City's jurisdictional are; or
 - h. Unbalanced value of any bid schedule items.
20. The City of Rockwall reserves the right to evaluate variations from these specifications. If exceptions are made, bidder shall state wherein the bid item fails to meet these specifications. Failure to completely describe the item being bid may result in rejection of your bid.
21. All bid guaranties shall be retained by the City of Rockwall until the required Contract and Surety Bonds have been executed, after which they shall be returned upon request.



PROPOSAL EVALUATION PROCESS

Proposals will be opened publicly to identify the Proposers and their respective proposed contract amounts. Other contents of the Proposals will be afforded security sufficient to preclude disclosure of the contents prior to award or rejection action.

Proposals, absent of the Bid Schedule Price, will be evaluated by the Committee. The criteria for evaluation and selection of the successful Proposer for this award will include the factors listed below.

1. The Committee shall score the received Proposals based on the evaluation criteria below to determine the Proposer that provides the Best Value. This score will be documented and considered in the development of the recommended ranking.
2. Proposal Evaluation shall be based on the highest scoring of the Proposals with a maximum score of 100 points apportioned as follows:

	Evaluation Criteria	Points
A	Bid Schedule Price	50
B	Experience with Similar Projects	20
C	Project Location	15
D	Schedule Performance and Delivery	10
E	Safety	5
Maximum Score:		100

3. In the event of a tie in the total summation of Evaluation Criteria Points, the lowest Proposal Bid Schedule Price will break the tie and determine the Successful Proposer.
4. Evaluation Criteria A:
Bid Schedule Price points shall be based on prices submitted by Proposers. The lowest responsible Proposer's Proposal Price determines the baseline and earns a maximum fifty (50) points. All remaining other Proposer's Proposal Prices will earn points based on a percentage in relation to the baseline:

$$\left(\frac{\text{Lowest Bid}}{\text{Proposer Total Bid Amount}} \right) *$$



5. Evaluation Criteria B:

Experience with Similar Projects shall be evaluated based on the demonstration of relevant experience for the projects with similar complexity of work listed in SOQ Form. Each Project List provided will be individually awarded points for the listed categories below. A maximum score of twenty (20) points may be awarded to each individual project that demonstrates experience in the listed category.

Experience with Similar Projects	Points Available Per Project Submitted
Construction Cost of at least \$20 million of an existing arterial	1
Project includes Road Paving Improvements	1
Project includes Street Drainage Improvements	1
Project Includes Pedestrian Improvements	1
Max Score: 4 Points per Project x 5 Projects =	20

6. Evaluation Criteria C:

Project Location shall be evaluated based on the information submitted in SOQ Form. Each Project location provided will be individually awarded one (1) point for the listed categories below. A maximum score of fifteen (15) points may be awarded to each of the 5 projects submitted that demonstrate experience in the listed category.

Project Location	Points Available Per Project Submitted
Project located within City of Rockwall	1
Project located within adjacent Counties (Rockwall, Dallas, Collin, Hunt, Kaufman)	1
Project located within NCTCOG registered Counties	1
Max Score: 3 Points per Project x 5 Projects =	15

7. Evaluation Criteria D:

Schedule Performance and Delivery shall be evaluated based on the information submitted in SOQ Form 1. Each Project schedule performance and delivery provided will be individually awarded one (1) point for the listed categories below. A maximum score of ten (10) points may be awarded to each of the 5 projects submitted that demonstrate experience in the listed category.

Schedule Performance and Delivery	Points Available Per Project Submitted
Project Schedules and Delivery Timelines provided	1
Project References provided	1
Max Score: 2 Points per Project x 5 Projects =	10



PROPOSAL EVALUATION PROCESS

8. Evaluation Criteria E:

Safety points shall be awarded based on the responses to the questions in the evaluation criteria. The score will be summed for a maximum of five (5) points.

Safety	Points
Proposer has a written safety program	1 point if "Yes"
Proposers conducts regular construction site safety inspections	1 point if "Yes"
Proposer has an active construction safety training program	1 point if "Yes"
Proposer has been fined by OSHA for any willful safety violations and/or citations in the past three (3) years	1 point if "No"
Proposer has an Experience Modifier Rate (EMR) of 1.0 or less	1 point if "Yes"
Max Score :	5

Within thirty (30) calendar days after opening the Proposals, the Committee will evaluate and rank each Proposal with respect to the published selection criteria described in the Proposal Ranking Procedure. After opening and ranking, an award may be made on the basis of the initially submitted Proposal, without negotiation, clarification, or modification; or the Owner may negotiate with the selected Proposer unit costs, schedules, and other elements of the Proposal. Other than the data read at the Proposal opening, the Owner will endeavor not to disclose any information derived from the Proposals submitted by competing Proposers in conducting such negotiations.

If the Owner is unable to negotiate a satisfactory contract with the selected Proposer, the Owner shall, formally and in writing, end negotiations with that Proposer and proceed to the next Proposer in the order of the selection ranking until a contract is reached or all proposals are rejected. After termination of discussions with any Proposer, Owner will not resume discussions with that Proposer.

Immediately following the Owner's award of a contract or rejection of all Proposals, the Proposers will be notified via U.S. mail and/or e-mail.

The Owner reserves the right to accept or reject any or all alternates or to accept any combination of alternates considered advantageous to the Owner.

The Owner agrees that if the Contract is awarded, it will be awarded to the Proposer offering the Best Value to the Owner, based upon published selection criteria, ranking evaluation, and negotiation. The Owner is not bound to accept the lowest priced Proposal if that Proposal is judged not to be the Best Value for the Owner, as determined by the Owner.

SOQ Form: Proposer Experience with Similar Projects (5 Projects)

Proposer shall complete this form for each past project experience (Make copies of this form and attach supplemental sheets as needed)

Project Information (provide project specific details for each item listed below)		
Project Owner:	Project Name:	Project Location:
Proposer Name:		
General description of project:		
Approximate % of Work Self- Performed: _____%		

Budget History (provide \$ amounts for each item listed below)
Executed Contract Value
Change Orders - Additional Owner Scope
Change Orders - Unforeseen Conditions, Design Issues, Force Majeure
Total Change Orders
Final Contract Value

SOQ Form: (Continued) Proposer Experience with Similar Projects (5 Projects)

Subcontractors Involved on the Project		
Name of Subcontractor: Subcontractor Contact Person: Email: Phone #:	Type of work performed by the subcontractor:	Subcontract Value:
Name of Subcontractor: Subcontractor Contact Person: Email: Phone #:	Type of work performed by the subcontractor:	Subcontract Value:
Name of Subcontractor: Subcontractor Contact Person: Email: Phone #:	Type of work performed by the subcontractor:	Subcontract Value:

Schedule Performance (provide date for each item listed below)
Notice to Proceed
Contract substantial completion date at Notice to Proceed
Contract final completion date at Notice to Proceed
Actual / estimated substantial completion date
Actual / estimated final completion date

Project Reference Contact Information				
	Name	Title/ position	Telephone	E-mail
Owner's Project Manager				
Designer's Project Representative				

STANDARDS OF CONDUCT

The City of Rockwall conducts business with the public, business partners, vendors and contractors under a set of rules to ensure that all City officials and employees discharge their duties in a manner designed to promote public trust and confidence in our city. This code of ethics, titled Standards of Conduct, is taken from the Rockwall City Code, Chapter 2, Article IV, Div. 4.

The City wants you to be aware of the rules that its employees are required to follow while performing their services to you. A violation of state or federal statutes may occur if these rules are broken. It is hoped that by outlining these rules for you, your experience in dealing with the City of Rockwall will be both rewarding and satisfactory.

Acceptance of Gifts or Gratuities

Accepting gifts or gratuities by employees in consideration for the performance of their duties, or as an appreciation for their performance, is strictly prohibited.

- Please do not offer employees any gift, loans or any other thing of value.
- Employees may not receive any fee or compensation for their services from any sources other than the City, so please don't offer.
- Please do not offer to buy meals for employees.
- Employees may accept coffee, tea, soft drinks, snacks, etc. when attending meetings in your office.
- Letters to supervisors for exceptional service by employees are always welcome.

Conflicts of Interest

Employees are prohibited from engaging in any outside activities that conflict with, or have the appearance of conflicting with, the duties assigned to them in the employment of the City.

- Please do not ask employees for any special favor or consideration that is not available to every other citizen.
- Please do not ask an employee to disclose any information that is not available to every other citizen through normal public information channels.
- Please do not offer to compensate the employee by offering to hire, or do business with any business entity of the employee or family member
- Do not ask employees to represent you or your company or make any recommendations on your behalf other than those that are a part of their official duties with the City.
- Please do not ask employees to endorse the products or services of your company.
- Please do not ask employees to hand out or post advertising materials.

Solicitation by City Employees

Employees may not solicit gifts, loans, or any other items of value from people doing City business that will be used by them personally.

- If you are asked to pay a fee for services that you believe is improper or illegal, please contact the City's ethic's officer at **972-772-6407**. (Payments should only be made to designated cashiers or clerks.)
- Employees are prohibited from taking retaliatory action against you for failing to comply with any request unless the request is within the scope of the employee's official duties for the City.



Use of City Equipment, Facilities and Resources

Use of City equipment, facilities and resources is authorized only for City purposes and for those activities permitted by City ordinance and policy.

- Please do not ask employees to use City equipment to run errands or perform tasks for your benefit.
- Employees may not perform tasks, nor conduct any business not related to their official duties while on City time.

Your Rights and Expectations

When dealing with employees of the City of Rockwall you have the right to honest, fair and impartial treatment. You may expect prompt, courteous and professional service from our employees who are expected to understand and practice good customer service skills. Employees are tasked to uphold the public trust through the ethical performance of their duties. We understand that the enforcement of regulatory guidelines and codes may sometimes be a cause for concern; however, you may rest assured that we are responsible to all of the citizens of Rockwall and our goal is to serve them to the best of our ability.

Should you have any concerns or questions concerning this information or the conduct of any of our employees please contact the City's ethic's officer at **972-772-6407**. All calls to the City's ethics officer are confidential and your name (or any other identifying information) will not be disclosed.

Mary Smith
City Manager



PROPOSAL

To: The Honorable Mayor and City Council Members
Purchasing Office – City Hall
City of Rockwall
385 S. Goliad
Rockwall, Texas, 75087

Pursuant to the Advertisement for Bid, Proposal, Contract, Bond(s), General Provisions, Special Provision(s), and Requirements and the Plans and Technical Specifications, the undersigned Bidder hereby proposes to do all the work and furnish all necessary superintendence, labor, machinery, equipment, tools and materials, and to complete all the work upon which he bids, as provided by the Specifications, and binds himself, on acceptance of the proposal, to execute a contract and bonds, according to the City of Rockwall forms, for performing and completing the said work within the required time, and furnish all guarantees, for the following prices, and the undersigned certifies that the bid prices contained in this proposal have been carefully checked and are submitted as correct and final, to wit:

NORTH LAKESHORE DRIVE RECONSTRUCTION

CIP 2024-002

NORTH LAKESHORE DRIVE RECONSTRUCTION**CIP 2024-002****BID FORM**

1. The undersigned Bidder proposes and agrees, if this Bid is accepted, to enter into an Agreement with CITY in the form included in the Bidding Documents to perform all Work as specified or indicated in the Bidding Documents for the prices and within the times indicated in this Bid and in accordance with the other terms and conditions of the Bidding Documents.
2. Bidder accepts all of the terms and conditions of the Advertisement for Bids and Instructions to Bidders, including without limitation those dealing with the disposition of Bid security. The Bid will remain subject to acceptance for one hundred and twenty days (120) after the Bid opening date, or for such longer period of time that Bidder may agree to in writing upon request of CITY.
3. In submitting this Bid, Bidder represents, as set forth in the Agreement, that:
 - A. Bidder has examined and carefully studied the Bidding Documents and the other related data identified in the Bidding Documents.
 - B. Bidder has visited the Site and become familiar with and is satisfied as to the general, local and site conditions that may affect cost, progress, and performance of the Work.
 - C. Bidder is familiar with and is satisfied as to all federal, state and local Laws and Regulations that may affect cost, progress and performance of the Work.
 - D. Bidder has carefully studied all reports of explorations and tests of subsurface conditions at or contiguous to the Site and all drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the Site.
 - E. Bidder has obtained and carefully studied (or assumes responsibility for having done so) all additional or supplementary examinations, investigations, explorations, tests, studies and data concerning conditions (surface, subsurface and Underground Facilities) at or contiguous to the Site which may affect cost, progress, or performance of the Work or which relate to any aspect of the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder, including applying the specific means, methods, techniques, sequences, and procedures of construction expressly required by the Bidding Documents to be employed by Bidder, and safety precautions and programs incident thereto.
 - F. Bidder does not consider that any further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of this Bid for performance of the Work at the prices bid and within the times and in accordance with the other terms and conditions of the Bidding Documents.
 - G. Bidder is aware of the general nature of work to be performed by CITY and others at the Site that relates to the Work as indicated in the Bidding Documents.
 - H. Bidder has correlated the information known to Bidder, information and observations obtained from visits to the Site, reports and drawings identified in the Bidding Documents, and all additional examinations, investigations, explorations, tests, studies, and data with the Bidding Documents.

Pre-bid Inspection

The undersigned declares that he has personally inspected the site where the work is to be performed and that he has informed himself of all:

- (1) surface and subsurface conditions, constraints, and facilities which may in any way affect the work, in terms of cost, time, and/or constructability;
- (2) quantities, types, and nature(s) of materials to be incorporated into the work;
- (3) types and specialties of equipment, tools, labor, and superintendence required to perform the work;
- (4) other matters which in any way will affect the work and/or the performance of the work;
- (5) project plans, specifications and other project documents.

Commencement and Execution

The undersigned bidder agrees to commence the work on or before the date so stated in the written notice to proceed and to diligently perform all of the work and to substantially complete the work **within 550 – 730 calendar days**. Time shall commence on the first day of move-in, but in no case later than the date so stated in the written notice to proceed. In the event the bidder is awarded the Contract and fails to complete the work within the time stated above or extended time agreed upon, as more particularly set forth in the Contract Documents, liquidated damages shall be paid to the City, in the amount as specified in Item 108.8 of the Standard Specifications for Public Works Construction per Calendar day.

The Time of Construction as given above shall include all work related to this project. Included in the above Time and Construction shall be the necessary utility work involved with the franchise utility companies (i.e. Natural Gas, Telecommunications, Cable Television, Electrical Power, etc.).

The right is reserved by the City as is advantageous to the City, to reject any and all bids, award a contract based upon submitted bids, or to re-bid the contract and to waive any and all formalities. Bidder understands and agrees that the unit prices provided above shall be used for all additions and deletions from the accepted option.

Bidder submits as guarantee that he will execute and issue the required contracts, bonds, insurance, and other required agreements and documents, as set forth under the contract, and general and special provisions of agreement, cashier's check or bid bond payable in full without conditions and upon demand to the City of Rockwall in the amount of:

(\$ _____),

representing 5% of the Bidder's total base bid price.

Bidder understands and agrees that, should he fail to execute and issue the contract, bonds, insurance, other agreements, and other documents as set forth under the general and special provisions of agreement for that certain contract known as the **North Lakeshore Drive Reconstruction and CIP 2024-002** the City will cash or demand payment under the bid bond for payment of agreed upon liquidated damages. Bidder understands and agrees that, for bidding purpose only, liquidated damages shall be 5% of the Bidder's bid proposal, and that upon execution of the Contract, liquidated damages shall be as stated in the General Provisions.



Name and business address of the surety company which will furnish the required bond is

of _____

The principal items of construction equipment which are available for and are intended to be used on the work area:

Addenda

Contractor acknowledges receipt and incorporation into the bid of addendums as listed below:

Addendum No. 1 – Acknowledgement of Receipt: _____ **(initial)**

Addendum No. 2 – Acknowledgement of Receipt: _____ **(initial)**

Addendum No. 3 – Acknowledgement of Receipt: _____ **(initial)**

Addendum No. 4 – Acknowledgement of Receipt: _____ **(initial)**

Proposal Approval:

Company Name

Signature:

Printed Name:

Title:

Company Address

Telephone

City State Zip Code

E-mail

(If Bidder is a Corporation Seal Proposal with Corporate Seal)

SEAL

N LAKESHORE DRIVE RECONSTRUCTION

CIP 2024-002

BID FORM

Item No.	Bid Quantities	Unit	Spec. Item	Description & Unit Price in Words	Unit Price in Figures	Extended Amount
Schedule A - Demolition/Preparation/Controls						
1	1	LS	See Bid Item Clar.	Mobilization		
				Complete in Place, for the Sum of		
				Dollars and Cents per unit	\$	\$
2	1	LS	NCTCOG 203.1 See Bid Item Clar.	General Site Preparation		
				Complete in Place, for the Sum of		
				Dollars and Cents per unit	\$	\$
3	18,150	CY	NCTCOG 203.4 See Bid Item Clar.	Unclassified Street Excavation		
				Complete in Place, for the Sum of		
				Dollars and Cents per unit	\$	\$
4	50	CY	TxDOT 110 See Bid Item Clar.	Excavation (Roadway) (TxDOT)		
				Complete in Place, for the Sum of		
				Dollars and Cents per unit	\$	\$
5	1	LS	See Bid Item Clar.	Traffic Control Barricades, Detouring, Lights and Watchmen		
				Complete in Place, for the Sum of		
				Dollars and Cents per unit	\$	\$
6	63,315	SY	NCTCOG 203.1 See Bid Item Clar.	Remove Existing Reinforced Concrete Pavement (Street)		
				Complete in Place, for the Sum of		
				Dollars and Cents per unit	\$	\$
7	2,280	SY	NCTCOG 203.1 See Bid Item Clar.	Remove Existing Reinforced Concrete (Drive/Alley)		
				Complete in Place, for the Sum of		
				Dollars and Cents per unit	\$	\$
8	6,005	SY	NCTCOG 203.1 See Bid Item Clar.	Remove Existing Reinforced Concrete (Sidewalk)		
				Complete in Place, for the Sum of		
				Dollars and Cents per unit	\$	\$
9	130	SY	NCTCOG 203.1 See Bid Item Clar.	Remove Existing Brick Pavers		
				Complete in Place, for the Sum of		
				Dollars and Cents per unit	\$	\$
10	300	SY	TxDOT 104 See Bid Item Clar.	Removing Concrete (Pav) (TxDOT)		
				Complete in Place, for the Sum of		
				Dollars and Cents per unit	\$	\$
11	100	SY	TxDOT 104 See Bid Item Clar.	Removing Concrete (Sidewalk) (TxDOT)		
				Complete in Place, for the Sum of		
				Dollars and Cents per unit	\$	\$
12	145	LF	TxDOT 104 See Bid Item Clar.	Removing Concrete (Curb and Gutter) (TxDOT)		
				Complete in Place, for the Sum of		
				Dollars and Cents per unit	\$	\$

N LAKESHORE DRIVE RECONSTRUCTION

CIP 2024-002

BID FORM

Item No.	Bid Quantities	Unit	Spec. Item	Description & Unit Price in Words	Unit Price in Figures	Extended Amount
13	85	LF	TxDOT 496 See Bid Item Clar.	Remove Structure (Concrete Wall)		
				Complete in Place, for the Sum of		
					\$	\$
				Dollars and Cents per unit		
14	105	LF	TxDOT 496 See Bid Item Clar.	Remove and Replace Existing Wall		
				Complete in Place, for the Sum of		
					\$	\$
				Dollars and Cents per unit		
15	1	EA	TxDOT 496 See Bid Item Clar.	Remove Existing Headwall		
				Complete in Place, for the Sum of		
					\$	\$
				Dollars and Cents per unit		
16	1	EA	NCTCOG 203.1 See Bid Item Clar.	Remove Existing 5' Inlet		
				Complete in Place, for the Sum of		
					\$	\$
				Dollars and Cents per unit		
17	37	EA	NCTCOG 203.1 See Bid Item Clar.	Remove Existing 10' Inlet		
				Complete in Place, for the Sum of		
					\$	\$
				Dollars and Cents per unit		
18	1	EA	NCTCOG 203.1 See Bid Item Clar.	Remove Existing 15' Inlet		
				Complete in Place, for the Sum of		
					\$	\$
				Dollars and Cents per unit		
19	3	EA	NCTCOG 203.1 See Bid Item Clar.	Remove Existing 20' Inlet		
				Complete in Place, for the Sum of		
					\$	\$
				Dollars and Cents per unit		
20	440	LF	NCTCOG 203.1 See Bid Item Clar.	Remove Existing RCP (18")		
				Complete in Place, for the Sum of		
					\$	\$
				Dollars and Cents per unit		
21	1,045	LF	NCTCOG 203.1 See Bid Item Clar.	Remove Existing RCP (21")		
				Complete in Place, for the Sum of		
					\$	\$
				Dollars and Cents per unit		
22	1,285	LF	NCTCOG 203.1 See Bid Item Clar.	Remove Existing RCP (24")		
				Complete in Place, for the Sum of		
					\$	\$
				Dollars and Cents per unit		
23	1,060	LF	NCTCOG 203.1 See Bid Item Clar.	Remove Existing RCP (27")		
				Complete in Place, for the Sum of		
					\$	\$
				Dollars and Cents per unit		
24	55	LF	NCTCOG 203.1 See Bid Item Clar.	Remove Existing RCP (30")		
				Complete in Place, for the Sum of		
					\$	\$
				Dollars and Cents per unit		
25	590	LF	NCTCOG 203.1 See Bid Item Clar.	Remove Existing RCP (33")		
				Complete in Place, for the Sum of		
					\$	\$
				Dollars and Cents per unit		

N LAKESHORE DRIVE RECONSTRUCTION

CIP 2024-002

BID FORM

Item No.	Bid Quantities	Unit	Spec. Item	Description & Unit Price in Words	Unit Price in Figures	Extended Amount
26	610	LF	NCTCOG 203.1 See Bid Item Clar.	Remove Existing RCP (36")		
				Complete in Place, for the Sum of		
					\$	\$
				Dollars and Cents per unit		
27	715	LF	NCTCOG 203.1 See Bid Item Clar.	Remove Existing RCP (42")		
				Complete in Place, for the Sum of		
					\$	\$
				Dollars and Cents per unit		
28	125	LF	NCTCOG 203.1 See Bid Item Clar.	Remove Existing RCP (60")		
				Complete in Place, for the Sum of		
					\$	\$
				Dollars and Cents per unit		
29	1	EA	NCTCOG 203.1, 502.12 See Bid Item Clar.	Remove and Install New 5' Inlet Top		
				Complete in Place, for the Sum of		
					\$	\$
				Dollars and Cents per unit		
30	1	EA	NCTCOG 203.1, 502.12 See Bid Item Clar.	Remove and Install New 10' Inlet Top		
				Complete in Place, for the Sum of		
					\$	\$
				Dollars and Cents per unit		
31	4	EA	NCTCOG 203.1 See Bid Item Clar.	Remove Existing Sanitary Sewer Manhole		
				Complete in Place, for the Sum of		
					\$	\$
				Dollars and Cents per unit		
32	12	EA	See Bid Item Clar.	Relocate Existing Mailbox (Wood/Metal Post)		
				Complete in Place, for the Sum of		
					\$	\$
				Dollars and Cents per unit		
33	33	EA	See Bid Item Clar.	Relocate Mailbox (Brick)		
				Complete in Place, for the Sum of		
					\$	\$
				Dollars and Cents per unit		
34	1	EA	See Bid Item Clar.	Relocate Mailbox (Stone)		
				Complete in Place, for the Sum of		
					\$	\$
				Dollars and Cents per unit		
35	45	LF	NCTCOG 203.1 See Bid Item Clar.	Remove and Replace Existing Fence		
				Complete in Place, for the Sum of		
					\$	\$
				Dollars and Cents per unit		
36	67	EA	NCTCOG 201.1, 203.1 See Bid Item Clar.	Remove Existing Tree (Various Sizes)		
				Complete in Place, for the Sum of		
					\$	\$
				Dollars and Cents per unit		
37	7	EA	NCTCOG 201.1, 203.1 See Bid Item Clar.	Remove Existing Bushes (Various Sizes)		
				Complete in Place, for the Sum of		
					\$	\$
				Dollars and Cents per unit		
38	24,970	SY	NCTCOG 201.1, 204.5 See Bid Item Clar.	Solid Block Sodding		
				Complete in Place, for the Sum of		
					\$	\$
				Dollars and Cents per unit		

**N LAKESHORE DRIVE RECONSTRUCTION
CIP 2024-002
BID FORM**

Item No.	Bid Quantities	Unit	Spec. Item	Description & Unit Price in Words	Unit Price in Figures	Extended Amount
39	1	LS	See Bid Item Clar.	Irrigation		
				Complete in Place, for the Sum of	\$	\$
				Dollars and Cents per unit		
40	1	LS	NCTCOG 202 See Bid Item Clar.	Temporary Erosion, Sedimentation, and Water Pollution Prevention and Control, SWPPP, NOI		
				Complete in Place, for the Sum of	\$	\$
				Dollars and Cents per unit		
41	12,080	LF	NCTCOG 107.20.3 Tech Spec 31 41 33 See Bid Item Clar.	Trench Safety		
				Complete in Place, for the Sum of	\$	\$
				Dollars and Cents per unit		
42	6	EA	NCTCOG 201.11 See Bid Item Clar.	Stabilized Construction Entrance		
				Complete in Place, for the Sum of	\$	\$
				Dollars and Cents per unit		

TOTAL AMOUNT BID - Schedule A - Demolition/Preparation/Controls

(Total Amount Bid, Numerical Value)

Dollars

and

Cents

(Total Amount Bid, in Words)

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N LAKESHORE DRIVE RECONSTRUCTION

CIP 2024-002

BID FORM

Item No.	Bid Quantities	Unit	Spec. Item	Description & Unit Price in Words	Unit Price in Figures	Extended Amount
Schedule B - Paving						
43	9,445	SY	NCTCOG 303 See Bid Item Clar.	6-inch Thick, Reinforced Concrete Pavement (Side Street)		
				Complete in Place, for the Sum of	\$	\$
				Dollars and Cents per unit		
44	685	SY	NCTCOG 303 See Bid Item Clar.	8-inch Thick, Reinforced Concrete Pavement (Side Street)		
				Complete in Place, for the Sum of	\$	\$
				Dollars and Cents per unit		
45	50,540	SY	NCTCOG 303 See Bid Item Clar.	10-inch Thick, Reinforced Concrete Pavement (Roadway and Side Street Approach)		
				Complete in Place, for the Sum of	\$	\$
				Dollars and Cents per unit		
46	275	SY	TxDOT 528 See Bid Item Clar.	Conc Pvmnt (Jointed - CPCD) (10") (TxDOT)		
				Complete in Place, for the Sum of	\$	\$
				Dollars and Cents per unit		
47	66,205	SY	NCTCOG 301.2 See Bid Item Clar.	6-inch Thick, Lime Stabilized Subgrade (36#/SY)		
				Complete in Place, for the Sum of	\$	\$
				Dollars and Cents per unit		
48	1,195	TON	NCTCOG 301.2 See Bid Item Clar.	Hydrated Lime		
				Complete in Place, for the Sum of	\$	\$
				Dollars and Cents per unit		
49	330	SY	TxDOT 260 See Bid Item Clar.	Lime Trt (Exst Matl) (6") (TxDOT)		
				Complete in Place, for the Sum of	\$	\$
				Dollars and Cents per unit		
50	6	TON	TxDOT 260 See Bid Item Clar.	Lime (Hydrated Lime (Slurry)) (TxDOT)		
				Complete in Place, for the Sum of	\$	\$
				Dollars and Cents per unit		
51	250	SY	NCTCOG 305.2 See Bid Item Clar.	6-inch Thick, Driveway (Concrete)		
				Complete in Place, for the Sum of	\$	\$
				Dollars and Cents per unit		
52	375	SY	NCTCOG 305.2 See Bid Item Clar.	6-inch Thick, Reinforced Concrete Driveway Approach		
				Complete in Place, for the Sum of	\$	\$
				Dollars and Cents per unit		
53	855	SY	NCTCOG 305.2 See Bid Item Clar.	10-inch Thick, Reinforced Concrete Driveway Approach		
				Complete in Place, for the Sum of	\$	\$
				Dollars and Cents per unit		
54	525	SY	NCTCOG 303 See Bid Item Clar.	7-inch Thick (Max), Reinforced Concrete Pavement (Alley)		
				Complete in Place, for the Sum of	\$	\$
				Dollars and Cents per unit		
55	817	SY	NCTCOG 303 See Bid Item Clar.	7-inch Thick, Reinforced Concrete Alley Approach		
				Complete in Place, for the Sum of	\$	\$
				Dollars and Cents per unit		

N LAKESHORE DRIVE RECONSTRUCTION

CIP 2024-002

BID FORM

Item No.	Bid Quantities	Unit	Spec. Item	Description & Unit Price in Words	Unit Price in Figures	Extended Amount
56	8,440	SY	NCTCOG 305.2 See Bid Item Clar.	4-inch Thick, Reinforced Concrete Sidewalk		
				Complete in Place, for the Sum of	\$	\$
				Dollars and Cents per unit		
57	10	SY	TxDOT 531 See Bid Item Clar.	Conc Sidewalk (4") (TxDOT)		
				Complete in Place, for the Sum of	\$	\$
				Dollars and Cents per unit		
58	4	EA	TxDOT 531 See Bid Item Clar.	TxDOT Type 2 Curb Ramp		
				Complete in Place, for the Sum of	\$	\$
				Dollars and Cents per unit		
59	2	EA	TxDOT 531 See Bid Item Clar.	TxDOT Type 5 Curb Ramp		
				Complete in Place, for the Sum of	\$	\$
				Dollars and Cents per unit		
60	56	EA	TxDOT 531 See Bid Item Clar.	TxDOT Type 7 Curb Ramp		
				Complete in Place, for the Sum of	\$	\$
				Dollars and Cents per unit		
61	33	EA	TxDOT 531 See Bid Item Clar.	TxDOT Type 10 Curb Ramp		
				Complete in Place, for the Sum of	\$	\$
				Dollars and Cents per unit		
62	44	EA	TxDOT 531 See Bid Item Clar.	TxDOT Type 10 Curb Ramp (No Detectable)		
				Complete in Place, for the Sum of	\$	\$
				Dollars and Cents per unit		
63	25	EA	NCTCOG 305.3 See Bid Item Clar.	Concrete Median Nose		
				Complete in Place, for the Sum of	\$	\$
				Dollars and Cents per unit		
64	1,425	SY	NCTCOG 305.3 See Bid Item Clar.	Concrete Median		
				Complete in Place, for the Sum of	\$	\$
				Dollars and Cents per unit		
65	10	SF	NCTCOG 802.1 See Bid Item Clar.	Concrete Steps		
				Complete in Place, for the Sum of	\$	\$
				Dollars and Cents per unit		
66	85	SY	TXDOT 528 See Bid Item Clar.	10-inch Thick, Colored Textured Concrete		
				Complete in Place, for the Sum of	\$	\$
				Dollars and Cents per unit		
67	595	LF	TxDOT 529 See Bid Item Clar.	6"- 36" Sidewalk Integral Wall (TY C1)		
				Complete in Place, for the Sum of	\$	
				Dollars and Cents per unit		
68	35	LF	TxDOT 529 See Bid Item Clar.	6"- 24" Sidewalk Integral Wall (TY F1)		
				Complete in Place, for the Sum of	\$	
				Dollars and Cents per unit		

N LAKESHORE DRIVE RECONSTRUCTION
CIP 2024-002
BID FORM

Item No.	Bid Quantities	Unit	Spec. Item	Description & Unit Price in Words	Unit Price in Figures	Extended Amount
69	25	LF	TxDOT 423 See Bid Item Clar.	Retaining Wall		
				Complete in Place, for the Sum of	\$	
				Dollars and Cents per unit		
70	20	EA	TxDOT 416 See Bid Item Clar.	Street Light Foundation		
				Complete in Place, for the Sum of	\$	
				Dollars and Cents per unit		

TOTAL AMOUNT BID - Schedule B - Paving

(Total Amount Bid, Numerical Value)

Dollars

and

Cents

(Total Amount Bid, in Words)

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N LAKESHORE DRIVE RECONSTRUCTION

CIP 2024-002

BID FORM

Item No.	Bid Quantities	Unit	Spec. Item	Description & Unit Price in Words	Unit Price in Figures	Extended Amount
Schedule C - Pavement Markings and Signage						
71	415	LF	TxDOT 666 See Bid Item Clar.	Type I (W) Sld 8" (90 Mil)		
				Complete in Place, for the Sum of	\$	\$
				Dollars and Cents per unit		
72	150	LF	TxDOT 666 See Bid Item Clar.	Type I (W) Sld 12" (90 Mil)		
				Complete in Place, for the Sum of	\$	\$
				Dollars and Cents per unit		
73	70	LF	TxDOT 666 See Bid Item Clar.	Type I (W) Sld 24" (90 Mil)		
				Complete in Place, for the Sum of	\$	\$
				Dollars and Cents per unit		
74	14	EA	TxDOT 666 See Bid Item Clar.	Type I (W) Arrow (TxDOT)		
				Complete in Place, for the Sum of	\$	\$
				Dollars and Cents per unit		
75	2	EA	TxDOT 666 See Bid Item Clar.	Type I (W) Word (TxDOT)		
				Complete in Place, for the Sum of	\$	\$
				Dollars and Cents per unit		
76	1	LS	See Bid Item Clar.	Signage		
				Complete in Place, for the Sum of	\$	\$
				Dollars and Cents per unit		
77	1,844	EA	TxDOT 672 See Bid Item Clar.	4" Round (W) Ceramic Non-Reflective Button		
				Complete in Place, for the Sum of	\$	\$
				Dollars and Cents per unit		
78	1,116	EA	TxDOT 672 See Bid Item Clar.	4" Square Clear/Red Acrylic Reflective Button		
				Complete in Place, for the Sum of	\$	\$
				Dollars and Cents per unit		
79	228	EA	TxDOT 672 See Bid Item Clar.	4" Round (Y) Ceramic Non-Reflective Button		
				Complete in Place, for the Sum of	\$	\$
				Dollars and Cents per unit		
80	114	EA	TxDOT 672 See Bid Item Clar.	4" Square Yellow/Yellow Acrylic Reflective Button		
				Complete in Place, for the Sum of	\$	\$
				Dollars and Cents per unit		

TOTAL AMOUNT BID - Schedule C - Pavement Markings and Signage

(Total Amount Bid, Numerical Value)

_____ Dollars

and _____ Cents

(Total Amount Bid, in Words)

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N LAKESHORE DRIVE RECONSTRUCTION

CIP 2024-002

BID FORM

Item No.	Bid Quantities	Unit	Spec. Item	Description & Unit Price in Words	Unit Price in Figures	Extended Amount
Schedule D - Drainage						
81	4,330	LF	NCTCOG 501.6, 508.3, 504 See Bid Item Clar.	18-inch Reinforced Concrete Pipe (RCP) (Class III)		
				Complete in Place, for the Sum of		
				Dollars and Cents per unit	\$	\$
82	1,195	LF	NCTCOG 501.6, 508.3, 504 See Bid Item Clar.	24-inch Reinforced Concrete Pipe (RCP) (Class III)		
				Complete in Place, for the Sum of		
				Dollars and Cents per unit	\$	\$
83	1,820	LF	NCTCOG 501.6, 508.3, 504 See Bid Item Clar.	30-inch Reinforced Concrete Pipe (RCP) (Class III)		
				Complete in Place, for the Sum of		
				Dollars and Cents per unit	\$	\$
84	865	LF	NCTCOG 501.6, 508.3, 504 See Bid Item Clar.	36-inch Reinforced Concrete Pipe (RCP) (Class III)		
				Complete in Place, for the Sum of		
				Dollars and Cents per unit	\$	\$
85	430	LF	NCTCOG 501.6, 508.3, 504 See Bid Item Clar.	42-inch Reinforced Concrete Pipe (RCP) (Class III)		
				Complete in Place, for the Sum of		
				Dollars and Cents per unit	\$	\$
86	500	LF	NCTCOG 501.6, 508.3, 504 See Bid Item Clar.	48-inch Reinforced Concrete Pipe (RCP) (Class III)		
				Complete in Place, for the Sum of		
				Dollars and Cents per unit	\$	\$
87	175	LF	NCTCOG 501.6, 508.3, 504 See Bid Item Clar.	54-inch Reinforced Concrete Pipe (RCP) (Class III)		
				Complete in Place, for the Sum of		
				Dollars and Cents per unit	\$	\$
88	1,075	LF	NCTCOG 501.6, 508.3, 504 See Bid Item Clar.	60-inch Reinforced Concrete Pipe (RCP) (Class III)		
				Complete in Place, for the Sum of		
				Dollars and Cents per unit	\$	\$
89	250	LF	NCTCOG 501.6, 508.3, 504 See Bid Item Clar.	5'x2' Reinforced Concrete Box (RCB) (Class III)		
				Complete in Place, for the Sum of		
				Dollars and Cents per unit	\$	\$
90	180	LF	NCTCOG 501.6, 508.3, 504 See Bid Item Clar.	5'x3' Reinforced Concrete Box (RCB) (Class III)		
				Complete in Place, for the Sum of		
				Dollars and Cents per unit	\$	\$
91	255	LF	NCTCOG 501.6, 508.3, 504 See Bid Item Clar.	6'x3' Reinforced Concrete Box (RCB) (Class III)		
				Complete in Place, for the Sum of		
				Dollars and Cents per unit	\$	\$
92	1	EA	See Bid Item Clar.	Concrete Headwall		
				Complete in Place, for the Sum of		
				Dollars and Cents per unit	\$	\$
93	4	EA	NCTCOG 502.12 See Bid Item Clar.	Standard Curb Inlet (5')		
				Complete in Place, for the Sum of		
				Dollars and Cents per unit	\$	\$

N LAKESHORE DRIVE RECONSTRUCTION

CIP 2024-002

BID FORM

Item No.	Bid Quantities	Unit	Spec. Item	Description & Unit Price in Words	Unit Price in Figures	Extended Amount
94	20	EA	NCTCOG 502.12 See Bid Item Clar.	Standard Curb Inlet (10')		
				Complete in Place, for the Sum of		
					\$	\$
				Dollars and Cents per unit		
95	24	EA	NCTCOG 502.12 See Bid Item Clar.	Standard Curb Inlet (15')		
				Complete in Place, for the Sum of		
					\$	\$
				Dollars and Cents per unit		
96	16	EA	NCTCOG 502.12 See Bid Item Clar.	Standard Curb Inlet (20')		
				Complete in Place, for the Sum of		
					\$	\$
				Dollars and Cents per unit		
97	1	EA	NCTCOG 502.12 See Bid Item Clar.	Standard Curb Inlet (10') (8' Depth)		
				Complete in Place, for the Sum of		
					\$	\$
				Dollars and Cents per unit		
98	1	EA	NCTCOG 502.12 See Bid Item Clar.	Standard Curb Inlet (15') (6' Depth)		
				Complete in Place, for the Sum of		
					\$	\$
				Dollars and Cents per unit		
99	1	EA	NCTCOG 502.12 See Bid Item Clar.	Standard Curb Inlet (15') (8.5' Depth)		
				Complete in Place, for the Sum of		
					\$	\$
				Dollars and Cents per unit		
100	1	EA	NCTCOG 502.12 See Bid Item Clar.	Standard Curb Inlet (20') (5' Depth)		
				Complete in Place, for the Sum of		
					\$	\$
				Dollars and Cents per unit		
101	4	EA	NCTCOG 502.12 See Bid Item Clar.	Standard Curb Inlet (20') (6.5' Depth)		
				Complete in Place, for the Sum of		
					\$	\$
				Dollars and Cents per unit		
102	1	EA	NCTCOG 502.12 See Bid Item Clar.	Standard Curb Inlet (20') (8.75' Depth)		
				Complete in Place, for the Sum of		
					\$	\$
				Dollars and Cents per unit		
103	1	EA	NCTCOG 502.12 See Bid Item Clar.	3' x 3' Standard Drop Inlet		
				Complete in Place, for the Sum of		
					\$	\$
				Dollars and Cents per unit		
104	1	EA	TxDOT 465 See Bid Item Clar.	Alley Curb Inlet Under Pavement (15')		
				Complete in Place, for the Sum of		
					\$	\$
				Dollars and Cents per unit		
105	3	EA	TxDOT 465 See Bid Item Clar.	Alley Curb Inlet Under Pavement (10') (6' Depth)		
				Complete in Place, for the Sum of		
					\$	\$
				Dollars and Cents per unit		
106	2	EA	TxDOT 465 See Bid Item Clar.	Alley Curb Inlet Under Pavement (15') (6' Depth)		
				Complete in Place, for the Sum of		
					\$	\$
				Dollars and Cents per unit		

N LAKESHORE DRIVE RECONSTRUCTION

CIP 2024-002

BID FORM

Item No.	Bid Quantities	Unit	Spec. Item	Description & Unit Price in Words	Unit Price in Figures	Extended Amount
107	1	EA	TxDOT 465 See Bid Item Clar.	Alley Curb Inlet Under Pavement (20') (6' Depth)		
				Complete in Place, for the Sum of		
					\$	\$
				Dollars and Cents per unit		
108	6	EA	NCTCOG 502.12 See Bid Item Clar.	4' x 4' Standard Square Manhole		
				Complete in Place, for the Sum of		
					\$	\$
				Dollars and Cents per unit		
109	12	EA	NCTCOG 502.12 See Bid Item Clar.	5' x 5' Standard Square Manhole		
				Complete in Place, for the Sum of		
					\$	\$
				Dollars and Cents per unit		
110	3	EA	NCTCOG 502.12 See Bid Item Clar.	6' x 6' Standard Square Manhole		
				Complete in Place, for the Sum of		
					\$	\$
				Dollars and Cents per unit		
111	1	EA	NCTCOG 502.12 See Bid Item Clar.	7' x 4' Junction Box		
				Complete in Place, for the Sum of		
					\$	\$
				Dollars and Cents per unit		
112	1	EA	NCTCOG 502.12 See Bid Item Clar.	7' x 7' Junction Box		
				Complete in Place, for the Sum of		
					\$	\$
				Dollars and Cents per unit		
113	4	EA	NCTCOG 502.12 See Bid Item Clar.	8' x 3' Junction Box		
				Complete in Place, for the Sum of		
					\$	\$
				Dollars and Cents per unit		
114	1	EA	NCTCOG 502.12 See Bid Item Clar.	8' x 5' Junction Box		
				Complete in Place, for the Sum of		
					\$	\$
				Dollars and Cents per unit		
115	1	EA	NCTCOG 502.12 See Bid Item Clar.	8' x 6' Junction Box		
				Complete in Place, for the Sum of		
					\$	\$
				Dollars and Cents per unit		
116	75	CY	TxDOT 432 See Bid Item Clar.	Riprap		
				Complete in Place, for the Sum of		
					\$	\$
				Dollars and Cents per unit		

TOTAL AMOUNT BID - Schedule D - Drainage

(Total Amount Bid, Numerical Value)

Dollars

and

Cents

(Total Amount Bid, in Words)

*The Owner reserves the right to delete any bid items or portions thereof. If the Owner elects to delete any portions of the PROJECT from the contract, then the contract can be awarded on that basis.

N LAKESHORE DRIVE RECONSTRUCTION
CIP 2024-002
BID FORM

Item No.	Bid Quantities	Unit	Spec. Item	Description & Unit Price in Words	Unit Price in Figures	Extended Amount
Schedule E - Water						
117	14	EA	See Bid Item Clar.	Lower Existing Water Line		
				Complete in Place, for the Sum of	\$	\$
				Dollars and Cents per unit		
118	14	EA	See Bid Item Clar.	Temporary Water Service		
				Complete in Place, for the Sum of	\$	\$
				Dollars and Cents per unit		

TOTAL AMOUNT BID - Schedule E - Water

(Total Amount Bid, Numerical Value)

_____ Dollars
and _____ Cents
(Total Amount Bid, in Words)

*The Owner reserves the right to delete any bid items or portions thereof. If the Owner elects to delete any portions of the PROJECT from the contract, then the contract can be awarded on that basis.

N LAKESHORE DRIVE RECONSTRUCTION
CIP 2024-002
BID FORM

Item No.	Bid Quantities	Unit	Spec. Item	Description & Unit Price in Words	Unit Price in Figures	Extended Amount
Schedule F - Sanitary Sewer						
119	1,005	LF	Tech Spec 33 05 22 See Bid Item Clar.	8 inch AWWA C900 DR-25 Sewer Pipe (Trenchless Method by Pipe Bursting)		
				Complete in Place, for the Sum of	\$	\$
				Dollars and Cents per unit		
120	45	CY	Tech Spec 03 34 13 See Bid Item Clar.	Controlled Low Strength Material (CLSM) for Utilities		
				Complete in Place, for the Sum of	\$	\$
				Dollars and Cents per unit		
121	5	EA	See Bid Item Clar.	Sanitary Sewer Service Installation (Pipe Bursting)		
				Complete in Place, for the Sum of	\$	\$
				Dollars and Cents per unit		
122	6	EA	NCTCOG 502.1 See Bid Item Clar.	Sanitary Sewer Manhole (48 inch diameter)(Complete In Place)		
				Complete in Place, for the Sum of	\$	\$
				Dollars and Cents per unit		
123	4	EA	See Bid Item Clar.	Connect Prop. PVC to Exist. Sanitary Sewer Pipe		
				Complete in Place, for the Sum of	\$	\$
				Dollars and Cents per unit		

TOTAL AMOUNT BID - Schedule F - Sanitary Sewer

(Total Amount Bid, Numerical Value)

Dollars

and

Cents

(Total Amount Bid, in Words)

*The Owner reserves the right to delete any bid items or portions thereof. If the Owner elects to delete any portions of the PROJECT from the contract, then the contract can be awarded on that basis.

N LAKESHORE DRIVE RECONSTRUCTION

CIP 2024-002

BID FORM

Item No.	Bid Quantities	Unit	Spec. Item	Description & Unit Price in Words	Unit Price in Figures	Extended Amount
Schedule G - Traffic Signal						
124	18	LF	TxDOT 416 7004 See Bid Item Clar.	Drill Shaft (24 IN)		
				Complete in Place, for the Sum of	\$	\$
				Dollars and Cents per unit		
125	40	LF	TxDOT 618 7054 See Bid Item Clar.	Condt (PVC) (SCH 80) (2")		
				Complete in Place, for the Sum of	\$	\$
				Dollars and Cents per unit		
126	300	LF	TxDOT 618 7090 See Bid Item Clar.	Conduit (Prepare)		
				Complete in Place, for the Sum of	\$	\$
				Dollars and Cents per unit		
127	40	LF	TxDOT 620 7009 See Bid Item Clar.	Elec Condr (No.6) Bare		
				Complete in Place, for the Sum of	\$	\$
				Dollars and Cents per unit		
128	1	EA	TxDOT 680 7002 See Bid Item Clar.	Install Hwy Trf Sig (Upgrade)		
				Complete in Place, for the Sum of	\$	\$
				Dollars and Cents per unit		
129	25	LF	TxDOT 684 7031 See Bid Item Clar.	Trf Sig Cbl (TY A) (14 AWG) (5 CONDR)		
				Complete in Place, for the Sum of	\$	\$
				Dollars and Cents per unit		
130	550	LF	TxDOT 684 7033 See Bid Item Clar.	Trf Sig Cbl (TY A) (14 AWG) (7 CONDR)		
				Complete in Place, for the Sum of	\$	\$
				Dollars and Cents per unit		
131	1	EA	TxDOT 687 7001 See Bid Item Clar.	Ped Pole Assembly		
				Complete in Place, for the Sum of	\$	\$
				Dollars and Cents per unit		
132	2	EA	TxDOT 687 7002 See Bid Item Clar.	Ped Push Button Pole		
				Complete in Place, for the Sum of	\$	\$
				Dollars and Cents per unit		
133	4	EA	TxDOT 688 7002 See Bid Item Clar.	Ped Detect Push Button (Standard)		
				Complete in Place, for the Sum of	\$	\$
				Dollars and Cents per unit		
134	4	EA	TxDOT 690 7030 See Bid Item Clar.	Removal of Ped Push Buttons		
				Complete in Place, for the Sum of	\$	\$
				Dollars and Cents per unit		
135	2	EA	TxDOT 6008 7001 See Bid Item Clar.	RVDS (Presence Detetection Only)		
				Complete in Place, for the Sum of	\$	\$
				Dollars and Cents per unit		

N LAKESHORE DRIVE RECONSTRUCTION
CIP 2024-002
BID FORM

Item No.	Bid Quantities	Unit	Spec. Item	Description & Unit Price in Words	Unit Price in Figures	Extended Amount
136	315	LF	TxDOT 6008 7009 See Bid Item Clar.	Radar Presence Detector Comm Cable		
				Complete in Place, for the Sum of	\$	\$
				Dollars and Cents per unit		
137	2	EA	TxDOT 6013 7007 See Bid Item Clar.	Ground Box (Adjust)		
				Complete in Place, for the Sum of	\$	\$
				Dollars and Cents per unit		

TOTAL AMOUNT BID - Schedule G - Traffic Signal

(Total Amount Bid, Numerical Value)

Dollars

and

Cents

(Total Amount Bid, in Words)

*The Owner reserves the right to delete any bid items or portions thereof. If the Owner elects to delete any portions of the PROJECT from the contract, then the contract can be awarded on that basis.

N LAKESHORE DRIVE RECONSTRUCTION
CIP 2024-002
BID FORM

Item No.	Bid Quantities	Unit	Spec. Item	Description & Unit Price in Words	Unit Price in Figures	Extended Amount
Alternate A - Flexible Base						
Deduct						
138	-66,205	SY	NCTCOG 301.2 See Bid Item Clar.	6-inch Thick, Lime Stabilized Subgrade (36#/SY)	\$	\$
				Complete in Place, for the Sum of		
				Dollars and		
				Cents per unit		
139	-1,195	TON	NCTCOG 301.2 See Bid Item Clar.	Hydrated Lime	\$	\$
				Complete in Place, for the Sum of		
				Dollars and		
				Cents per unit		
	Add					
140	15,500	CY	NCTCOG 203.4 See Bid Item Clar.	Unclassified Street Excavation	\$	\$
				Complete in Place, for the Sum of		
				Dollars and		
				Cents per unit		
141	66,205	SY	TxDOT 247 See Bid Item Clar.	8-inch Thick, Flexible Base (Type A) (Grade 1 or 2)	\$	\$
				Complete in Place, for the Sum of		
				Dollars and		
				Cents per unit		

TOTAL AMOUNT BID - Alternate A - Flexible Base

(Total Amount Bid, Numerical Value)

Dollars

and

Cents

(Total Amount Bid, in Words)

*The Owner reserves the right to delete any bid items or portions thereof. If the Owner elects to delete any portions of the PROJECT from the contract, then the contract can be awarded on that basis.

N LAKESHORE DRIVE RECONSTRUCTION
CIP 2024-002
BID FORM

Item No.	Bid Quantities	Unit	Spec. Item	Description & Unit Price in Words	Unit Price in Figures	Extended Amount
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BID SCHEDULE SUMMARY

Schedule A - Demolition/Preparation/Controls		(Total Amount Bid, Numerical Value)
Schedule B - Paving		(Total Amount Bid, Numerical Value)
Schedule C - Pavement Markings and Signage		(Total Amount Bid, Numerical Value)
Schedule D - Drainage		(Total Amount Bid, Numerical Value)
Schedule E - Water		(Total Amount Bid, Numerical Value)
Schedule F - Sanitary Sewer		(Total Amount Bid, Numerical Value)
Schedule G - Traffic Signal		(Total Amount Bid, Numerical Value)
Alternate A - Flexible Base		(Total Amount Bid, Numerical Value)

BID SCHEDULE SUMMARY

TOTAL BASE BID (Items 1 to 137) (Numeric)		(Total Amount Bid, Numerical Value)
TOTAL BASE BID (Items 1 to 137) (In Words)		
		Dollars &
and		Cents
TOTAL ALTERNATE BID (Items 138 to 141) (Numeric)		(Total Amount Bid, Numerical Value)
TOTAL ALTERNATE BID (Items 138 to 141) (In Words)		
		Dollars &
and		Cents
		Dollars &

*The Owner reserves the right to delete any bid items or portions thereof. If the Owner elects to delete any portions of the PROJECT from the contract, then the contract can be awarded on that basis.



DISADVANTAGED BUSINESS ENTERPRISE (DBE) INFORMATION

Disadvantaged Business Enterprises (DBEs) are encouraged to participate in City of Rockwall's bid. The Purchasing Office will provide additional clarification on specifications, assistance with Bid Proposal Forms and further explanation of bidding procedures to those DBEs who request it.

Representatives from DBE companies should identify themselves as such and submit a copy of the Certification.

The City of Rockwall recognizes the certifications of both the State of Texas General Services Commission HUB Program and the North Central Texas Regional Certification Agency. All companies seeking information concerning DBE certification are urged to contact

State of Texas HUB Program
General Services Commission
PO Box 13528
Austin, TX 78711
512-463-5872

OR

North Central Texas
Regional Certification Agency
2261 Brookhollow Plaza Drive, Suite 300
Arlington, TX 76006
817-640-0606

If your company is already certified, attach a copy of your certification to this form and return with your bid.

FIRM NAME SUBMITTING THE BID

REPRESENTATIVE

TITLE OF AUTHORIZED REPRESENTATIVE

ADDRESS

CITY, STATE, ZIP

TELEPHONE NUMBER

FACSIMILE NUMBER

Indicate all that apply:

- ☐ Minority-Owned Business Enterprise
- ☐ Women-Owned Business Enterprise
- ☐ Disadvantaged Business Enterprise
- ☐ None of the Above



Non-Exclusion Affidavit - System for Award Management (SAM)

Federal, state, and local government agencies, not-profits, and other organizations that use federal money to fund all or part of any program or project are required to follow specific requirements regarding the use of such federal funds. One of these requirements is that no contract, subcontract, grant, financial assistance, or other forms of assistance provided using federal funds may be awarded to individuals or entities that have been suspended, debarred, or otherwise excluded from participation in federally funded programs.

The U.S. federal government maintains a Web site known as the "System for Award Management" (SAM) at www.sam.gov. One of the purposes of the SAM Web site is to provide a comprehensive list of all individuals, firms, and other entities that have been suspended, debarred, or otherwise excluded from participation in federally funded contracts, subcontracts, grants, etc. SAM provides a simple means of helping government, non-profit agencies, and other organizations ensure that they do not award federally-funded grants, contracts, subcontracts, or other financial or non-financial benefits to any individual, firm, or other entity that has been excluded by any agency from participation in such federally funded activities.

I, _____ (***Contractor Representative***), hereby certify that neither I nor _____ (***Name of the company or organization I represent***) nor any subcontractors that I or said company may employ to work on any federally funded activity have been suspended, debarred, or otherwise excluded by any federal agency from participation in any federally funded activity. I further acknowledge my understanding that, before entering into a contract with me or with the company or organization I represent, City of Rockwall staff will perform a search on www.sam.gov to verify whether I, the organization I represent, or any subcontractors I may employ to work on any federally funded activity, have been excluded from participation in any federally funded activity.

Signature of Contractor Representative

Date

Notary

Sworn to and subscribed before me this _____ day of _____, 20____

Notary Public in and for _____ County, _____ (Insert State Name)



- I. Bidder has given CITY written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder has discovered in the Bidding Documents, and the written resolution thereof by CITY is acceptable to Bidder.
 - J. The Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance of the Work for which this Bid is submitted.
4. Bidder further represents that this Bid is genuine and not made in the interest of or on behalf of any undisclosed individual or entity and is not submitted in conformity with any agreement or rules of any group, association, organization or corporation; Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid; Bidder has not solicited or induced any individual or entity to refrain from bidding; and Bidder has not sought by collusion to obtain for itself any advantage over any other Bidder or over CITY.
5. Bidder will complete the Work in accordance with the Contract Documents for the following prices:



NON-COLLUSION STATEMENT

The undersigned affirms that they are duly authorized to execute this contract, that this company, corporation, firm, partnership or individual has not prepared this bid in collusion with any other proposer and that the contents of this bid as to prices, terms or conditions of said bid have not been communicated by the undersigned nor by any employee or agent to any other person engaged in this type of business prior to the official opening of this bid.

Name of Company _____

Address _____

Phone _____

Email _____

Fax _____

Proposer (Signature) _____

Proposer (Print Name) _____

Position with Company _____

Signature of
Company Official
Authorizing This Bid _____

Company Official
(Printed Name) _____

Official Position _____

SUBSCRIBED AND SWORN TO BEFORE ME, this _____ day of _____, 20__.

(Notary Public in and for the State of Texas)

(Printed Name of Notary)

My commission expires _____

CONFLICT OF INTEREST QUESTIONNAIRE

For vendor or other person doing business with local governmental entity

FORM CIQ

This questionnaire reflects changes made to the law by H.B. 1491, 80th Leg., Regular Session.

This questionnaire is being filed in accordance with Chapter 176, Local Government Code by a person who has a business relationship as defined by Section 176.001(1-a) with a local governmental entity and the person meets requirements under Section 176.006(a).

By law this questionnaire must be filed with the records administrator of the local governmental entity not later than the 7th business day after the date the person becomes aware of facts that require the statement to be filed. See Section 176.006, Local Government Code.

A person commits an offense if the person knowingly violates Section 176.006, Local Government Code. An offense under this section is a Class C misdemeanor

OFFICE USE ONLY

Date Received

1. Name of person who has a business relationship with local governmental entity.

2. ☐ Check this box if you are filing an update to a previously filed questionnaire.

(The law requires that you file an updated completed questionnaire with the appropriate filing authority not later than the 7th business day after the date the originally filed questionnaire becomes incomplete or inaccurate.)

3. Name of local government officer with whom filer has employment or business relationship.

Name of Officer

This section (item 3 including subparts A, B, C & D) must be completed for each officer with whom the filer has an employment or other business relationship as defined by Section 176.001(1-a), Local Government Code. Attach additional pages to this Form CIQ as necessary.

A. Is the local government officer named in this section receiving or likely to receive taxable income, other than investment income, from the filer of the questionnaire?

☐ Yes

☐ No

B. Is the filer of the questionnaire receiving or likely to receive taxable income, other than investment income, from or at the direction of the local government officer named in this section AND the taxable income is not received from the local governmental entity?

☐ Yes

☐ No

C. Is the filer of this questionnaire employed by a corporation or other business entity with respect to which the local government officer serves as an officer or director, or holds an ownership of 10 percent or more?

☐ Yes

☐ No

D. Describe each employment or business relationship with the local government officer named in this section.

4.

Signature of person doing business with the governmental entity

Date

**TO ALL CONTRACTORS, CONSULTANTS AND VENDORS
CONDUCTING BUSINESS WITH THE CITY OF ROCKWALL**

Updated: December 28, 2009

**Conflict of Interest Questionnaire
Disclosure of Certain Relationships with Local Government Officers
and Providing Public Access to Certain Information**

Chapter 176 of the Texas Local Government Code is an ethics law that was initially enacted by the Texas Legislature with HB 914 in 2005. The law was modified by the Texas Legislature in 2007 with HB 1491 in order to clarify many provisions of the original law.

The law requires certain local governmental officials to disclose employment and business relationships with contractors, consultants and vendors who conduct business with local government entities.

Chapter 176 defines a **“vendor”** as any person who enters **or seeks to enter** into a contract with a city. The term also includes an agent of a **“vendor”**.

Local government officers subject to this law are a city council member, director, superintendent, administrator, president, city manager, or any other person who is designated as the executive officer of the local governmental entity. A municipal officer's family member would include the officer's spouse, father, mother, son, daughter, father-in-law, mother-in-law, son-in-law, daughter-in-law, or step-child.

The law applies to any written contract for the sale or purchase of real property, goods or services. A contract for services includes skilled or unskilled labor, or for professional services.

A **“vendor”** must file a **Conflict of Interest Questionnaire** if the **“vendor”** has a business relationship with the city and has:

1. An employment or other business relationship with an officer or an officer's family member that results in that person receiving taxable income that is more than \$2,500 in the preceding twelve months; or
2. Has given an officer or an officer's family member one or more gifts totaling more than \$250 in the preceding twelve months.

A **“vendor”** is required to file a questionnaire not later than the seventh business day after the later of the following:

1. The date the vendor begins discussions or negotiations to enter into a contract with the city or submits an application or response to a bid proposal; or
2. The date the **“vendor”** becomes aware of a relationship or gives a gift to an officer or officer's family member.

Further information regarding Texas Conflict of Interest laws and the **Conflict of Interest Questionnaire** can be found at the Texas Ethics Commission web site at the following web address:

http://www.ethics.state.tx.us/whatsnew/conflict_forms.htm

The Texas Office of the Attorney General has a publication titled 2010 Texas Conflict of Interest Laws Made Easy available at the following web address:

http://www.oag.state.tx.us/AG_Publications/pdfs/conflict_easy.pdf



BID BOND

Bond No.: _____
(by Surety)

STATE OF TEXAS §
 § **KNOW ALL MEN BY THESE PRESENTS:**
COUNTY OF ROCKWALL §

THAT _____, of the City of _____,
_____ County, State of Texas (hereinafter referred to as "Principal"), and
_____, authorized under the laws of the State of Texas to act as Surety on
bonds for principals (hereinafter referred to as "Surety") are held and firmly bound unto the City of Rockwall
(hereinafter referred to as "City") in the penal sum of \$_____ (an amount equal to 5% of
the approximate total amount of the bid or if the bid is based upon alternates and/or addenda, at least 5% of
the greatest amount bid by the bidder or Principal herein as evidenced in the Bid Proposal) for the payment
whereof, the said Principal and Surety bind themselves, and their heirs, administrators, executors, successors
and assigns, jointly and severally, by these presents;

WHEREAS the Principal has submitted on or about this date, a bid proposal offering to perform the
following: **NORTH LAKESHORE DRIVE RECONSTRUCTION AND CITY CONTRACT NO. CIP 2024-002** in
accordance with the specifications and terms and conditions related thereto, to which reference is hereby
made;

NOW, THEREFORE, the condition of this obligation is such that if the said Principal's offer as stated in
the bid proposal is accepted by the City, and the said Principal executes and returns to the City the number of
original counterparts of the contract required by the City, on the forms provided by the City, for the materials,
equipment and/or services described herein and also executes and returns the same number of Performance,
Payment and Maintenance Bonds, if required, on the forms provided by the City, within the time provided in the
specifications, then this obligation is null and void, otherwise, it is to remain in full force and effect;

IN WITNESS WHEREOF, the said Principal and Surety have signed and sealed this instrument on this _____
day of _____, 2026.

PRINCIPAL:

Signature

Typed or Printed Name

Title: _____

Company: _____

Address: _____

SURETY:

Signature

Typed or Printed Name

Title: _____

Company: _____

Address: _____



CONTRACT AND BOND FORMS

NOTICE TO BIDDERS

The following blank spaces in the contract and bonds **are not to be filled in** by the Bidder at the time of submitting his proposal.

The contract and bond forms are submitted at this time to familiarize the Bidder with the form of contract and bonds that the successful Bidder will be required to execute.



CONTRACT

STATE OF TEXAS §
 § **KNOW ALL MEN BY THESE PRESENTS:**
COUNTY OF ROCKWALL §

THIS CONTRACT is made and entered into this _____ day of _____, 202__, by and between the CITY OF ROCKWALL, TEXAS, of the County of Rockwall and State of Texas, acting through **Mary Smith, City Manager**, thereunto duly authorized so to do, hereinafter termed **CITY**, and _____, of the City of _____, County of _____ and State of Texas, hereinafter termed **CONTRACTOR**.

WITNESSETH: In consideration of the mutual covenants hereinafter set forth, the City and Contractor agree as follows:

Article I. Work

The Contractor shall perform all of the work as specified in the Contract Documents. The work is generally described as follows:

NORTH LAKESHORE DRIVE RECONSTRUCTION CIP NO: 2024-002

Plans and Specifications prepared by: Kimley-Horn and Associates, Inc.

All extra work shall be performed as specified or indicated in the Contract Documents; and, at the Contractor's own cost and expense, the Contractor shall furnish all the materials, supplies, machinery, equipment, tools, superintendence, labor, insurance, and other accessories and services as may be necessary in order to complete the construction, as described above and in accordance with the Contract Documents unless otherwise agreed to by the City.

Article II. Contract Documents

The Contract Documents may only be altered, amended or modified as provided in the General Conditions. The Contract Documents consist of:

1. This written agreement setting forth the work to be performed;
2. advertisement,
3. instructions to proposers,
4. proposal evaluation process,
5. SOQ forms,
6. proposal,
7. bid form,
8. addendums,
9. the Standard Specifications for Public Works Construction (North Central Texas 2017, Fifth Edition) as amended and supplemented by the 2023 Edition of the City of Rockwall Special Provisions to said Standard Specifications, as amended (hereinafter referred to as "Rockwall Standard Specifications"),
10. general provisions with addendums,
11. special provisions,
12. special conditions,
13. and technical specifications,
14. project plans or working drawings,
15. City of Rockwall's Standard Construction Details,
16. any supplemental changes or agreements pertaining to the work or materials therefore,



17. a Performance Bond in the sum of ONE HUNDRED PERCENT (100%) of the total contract price,
18. a Payment Bond in the sum of ONE HUNDRED PERCENT (100%) of the total contract price,
19. a Maintenance Bond (if required) in the sum of TEN PERCENT (10%) of the total contract price, which Bond shall be in a form acceptable to the City, and shall provide for repair or replacement of all defects due to faulty material and/or workmanship that appear within a period of two (2) years from the date of final acceptance by the City,
20. the Notice to Contractor
21. Contractor's Right of Entry Agreement
22. and any additional documents incorporated by reference.

These form the Contract Documents and all are as fully a part of the Contract as if attached to this agreement or repeated herein.

Article III. Contract Price

The City shall pay the Contractor for completion of the work in accordance with the Contract Documents using current funds the price or prices shown in the proposal and bid form, which forms a part of this contract the sum of:

_____ (in words)
_____ (numeric)

Such payments shall be subject to the provisions of the Contract Documents.

Article IV. Time of Commencement; Time of Completion; Liquidated Damages

Contractor shall commence work within ten (10) calendar days after receiving from City a notice to proceed or work order. Contractor agrees and covenants that all work hereunder shall be complete within **550 - 730 calendar days** following notice to proceed.

The parties acknowledge that adherence by Contractor to the completion schedule set forth herein is essential to this Agreement. It is agreed by the parties that the actual damages which might be sustained by City by reason of the breach by Contractor of its promise to complete in accordance with the provisions hereof are uncertain and would be difficult of ascertainment; it is further agreed that the sum of **Five Hundred Dollars (\$500.00)** for each day that completion is overdue would be reasonable and just compensation for such breach, and Contractor hereby promises to pay such sum as liquidated damages, and not as a penalty, in the event of such breach.

Article V. PROGRESS AND FINAL PAYMENTS

Progress and final payments shall be paid to the Contractor in accordance with the ROCKWALL Standard Specifications.

Article VI. CHOICE OF LAW; VENUE; CONTRACT INTERPRETATION

The parties agree that the law of the State of Texas shall apply to this Agreement, and that it is performable in ROCKWALL County, Texas. Exclusive venue shall lie in ROCKWALL County, Texas. Although this Agreement is drafted by the City, should any part be in dispute, the parties agree the Agreement shall not be construed more favorably for either Party.

Article VII. ENTIRE AGREEMENT; AMENDMENTS; BINDING EFFECT

This Construction Agreement, including the Contract Documents listed in Paragraph I hereinabove, represents the entire and integrated agreement between City and the Contractor, and supersedes all prior negotiations, representations, or agreements, either written or oral. This Construction Agreement may be amended only by



written instrument signed by both City and Contractor. This Construction Agreement is binding upon and shall inure to the benefit of the parties hereto and their respective successors and assigns.

VIII. EFFECTIVE DATE

The effective date of this Construction Agreement will be the date of approval by the City Council of the City of ROCKWALL, Texas.

IN WITNESS WHEREOF, the City and Contractor have executed this Contract in duplicate and on the date aforementioned. All portions of the Contract Documents have been signed or identified by the City and Contractor.

**CITY OF ROCKWALL
(CITY)**

By: _____

Mary Smith
City Manager

ATTEST:

City Secretary

APPROVED AS TO FORM:

(CONTRACTOR)

BY: _____

(signature)

TYPED NAME: _____

TITLE: _____

ATTEST:



CORPORATE ACKNOWLEDGMENT

STATE OF TEXAS §
 §
COUNTY OF _____ §

BEFORE ME, the undersigned authority, on this day appeared in person the within named _____, who stated that he is the President of _____, a _____ Texas Corporation, and is duly authorized in his capacity to execute the annexed and foregoing instrument for and in the name and behalf of said Corporation, and further stated and acknowledged that he has so signed, executed and delivered said foregoing instrument for the consideration, uses and purposes therein mentioned and set forth.

GIVEN under my hand and seal of office this the ____ day of _____, 202_.

Notary Public in and for
the State of Texas

ACKNOWLEDGMENT

STATE OF TEXAS §
 §
COUNTY OF ROCKWALL §

BEFORE ME, the undersigned authority, on this day personally appeared **Mary Smith**, City Manager of the **CITY OF ROCKWALL, TEXAS**, a Home-Rule Municipal Corporation, known to me to be the person whose name is subscribed to the foregoing instrument, and acknowledged to me that he executed the same as the act and deed of the **CITY OF ROCKWALL, TEXAS**, for the purposes and consideration therein expressed and in the capacity therein stated.

GIVEN under my hand and seal of office this the ____ day of _____, 202_.

Notary Public in and for
the State of Texas



IN WITNESS WHEREOF, the said Principal and Surety have signed and sealed this instrument on this the ____ day of _____, 2025.

PRINCIPAL:

Signature: _____

Printed Name: _____

Title: _____

Company: _____

Street Address: _____

(P.O. Box is not acceptable)

City, State, Zip Code

Phone Number: _____

SURETY:

Signature: _____

Printed Name: _____

Title: _____

Company: _____

Street Address: _____

(P.O. Box is not acceptable)

City, State, Zip Code



PERFORMANCE BOND

STATE OF TEXAS §
 § **KNOW ALL MEN BY THESE PRESENTS:**
COUNTY OF ROCKWALL §

THAT _____, of the City of _____, _____ County, State of Texas (hereinafter referred to as "Principal"), and _____ (hereinafter referred to as "Surety"), authorized under the laws of the State of Texas to act as Surety on bonds for principals are held and firmly bound unto the **City of Rockwall** (hereinafter referred to as "City") in the penal sum of \$_____ (not less than 100% of the approximate total amount of the Contract as evidenced in the Proposal) for the payment whereof, the said Principal and Surety bind themselves, and their heirs, administrators, executors, successors and assigns, jointly and severally, by these presents:

WHEREAS the Principal has entered into a certain written contract with the City, dated the _____ day of _____, 2026, for the **NORTH LAKESHORE DRIVE RECONSTRUCTION AND CIP NO. 2024-002** to which said Contract is hereby referred to and made a part hereof and as fully and to the same extent as if copied at length herein;

NOW, THEREFORE, the condition of this obligation is such that if the said Principal fully and faithfully executes the work and performance of the Contract in accordance with the Plans, Specifications and Contract Documents, including any extensions thereof, and according to the true intent and meaning of said Contract and the Plans and Specifications hereto annexed, then this obligation shall be void; otherwise, to remain in full force and effect.

PROVIDED, HOWEVER, that this Bond is executed pursuant to the provisions of V.T.C.A. Government Code Chapter 2253, Public Work Performance and Payment bonds, as amended, and Article 53.201 of the Property Code, and all liabilities on this Bond shall be determined in accordance with the provisions of said articles to the same extent as if they were fully copied at length herein.

Surety, for value received, stipulates and agrees that the Bond shall automatically be increased by the amount of any change order or supplemental agreement which increases the contract price with or without notice to the Surety and that no change, extension of time, alteration or addition to the terms of the Contract, or to the work performed thereunder, or the Plans, Specifications or Drawings accompanying the same shall in any way affect its obligation on this Bond, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the Contract or to the work to be performed thereunder.

Surety must be approved by the Texas State Board of Insurance under Article 7.19-1 of the Insurance Code and authorized under the laws of Texas to act a surety on bonds for principals.



IN WITNESS WHEREOF, the said Principal and Surety have signed and sealed this instrument on this the ____ day of _____, 2026.

PRINCIPAL:

Signature: _____

Printed Name: _____

Title: _____

Company: _____

Street Address: _____

(P.O. Box is not acceptable)

City, State, Zip Code

Phone Number: _____

SURETY:

Signature: _____

Printed Name: _____

Title: _____

Company: _____

Street Address: _____

(P.O. Box is not acceptable)

City, State, Zip Code



PAYMENT BOND

STATE OF TEXAS §
 § **KNOW ALL MEN BY THESE PRESENTS:**
COUNTY OF ROCKWALL §

THAT _____, of the City of _____, _____ County, State of Texas, (hereinafter referred to as Principal), and _____ (hereinafter referred to as "Surety"), authorized under the laws of the State of Texas to act as Surety on bonds for principals are held and firmly bound unto the City of Rockwall (hereinafter referred to as "City") in the penal sum of \$_____ (an amount not less than 100% of the approximate total amount of the Contract) for the payment whereof, the said Principal and Surety bind themselves, and their heirs, administrators, executors, successors and assigns, jointly and severally, by these presents:

WHEREAS the Principal has entered into a certain written contract with the City, dated the _____ day of _____, 2026, for the **NORTH LAKESHORE DRIVE RECONSTRUCTION AND CITY CONTRACT NO. 2024-002** to which said Contract is hereby referred to and made a part hereof and as fully and to the same extent as if copied at length herein;

NOW, THEREFORE, the condition of this obligation is such that the bond guarantees the full and proper protection of all claimants supplying labor and material in the prosecution of the work provided for in said Contract and for the use of each claimant, and that conversely should the Principal faithfully perform said Contract and in all respects duly and faithfully observe and perform all and singular the covenants, conditions and agreements in and by said Contract agreed to by the Principal, and according to the true intent and meaning of said Contract, and the claims and specifications hereto annexed, then this obligation shall be void; otherwise, to remain in full force and effect.

PROVIDED, HOWEVER, that this Bond is executed pursuant to the provisions of V.T.C.A. Government Code Chapter 2253, Public Work Performance and Payment bonds, as amended, and Article 53.201 of the Property Code, and all liabilities on this Bond shall be determined in accordance with the provisions of said articles to the same extent as if they were fully copied at length herein.

Surety, for value received, stipulates and agrees that no change, extension of time, alteration or addition to the terms of the Contract, or to the work performed thereunder, or the Plans, Specifications or Drawings accompanying same shall in any way affect its obligation on this bond, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the Contract or to the work to be performed thereunder.

Surety must be approved by the Texas State Board of Insurance under Article 7.19-1 of the Insurance Code and authorized under the laws of Texas to act a surety on bonds for principals.



IN WITNESS WHEREOF, the said Principal and Surety have signed and sealed this instrument on this the ____ day of _____, 2026.

PRINCIPAL:

Signature: _____

Printed Name: _____

Title: _____

Company: _____

Street Address: _____

(P.O. Box is not acceptable)

City, State, Zip Code

Phone Number: _____

SURETY:

Signature: _____

Printed Name: _____

Title: _____

Company: _____

Street Address: _____

(P.O. Box is not acceptable)

City, State, Zip Code

MAINTENANCE BOND

STATE OF TEXAS §
 § **KNOW ALL MEN BY THESE PRESENTS:**
COUNTY OF ROCKWALL §

THAT _____ of the City of _____, _____ County, State of Texas, (hereinafter referred to as Principal), and _____ (hereinafter referred to as "Surety"), authorized under the laws of the State of Texas to act as Surety on bonds for principals are held and firmly bound unto the City of Rockwall (hereinafter referred to as "City") in the penal sum of \$_____ (an amount not less than 10% of the approximate total amount of the Contract) for the payment whereof, the said Principal and Surety bind themselves, and their heirs, administrators, executors, successors and assigns, jointly and severally, by these presents:

WHEREAS, the Principal has entered into a certain written contract with the City of Rockwall, Texas, dated **the _____ day of _____, 2026**, for the **NORTH LAKESHORE DRIVE RECONSTRUCTION AND CITY CONTRACT NO. 2024-002**, to which said contract is hereby referred to and made a part hereof and as fully and to the same extent as if copied at length herein.

NOW, THEREFORE, the Principal in said Contract and herein, binds itself to use first class materials and workmanship and of such kind and quality that for a period of two (2) years from the completion and final acceptance of the improvements by the City, the said improvements shall require no repairs, the necessity for which shall be occasioned by defects in workmanship or materials and during the period of two (2) years following the date of the final acceptance of the work by the City, the Contractor binds itself to repair or reconstruct the said improvements in whole or in part at any time within said period and that it will, upon receiving notice, repair or reconstruct said improvements from the date of such notice as the City shall determine to be necessary. If said Contractor does not repair or reconstruct the improvements within the time period designated then the City shall be entitled to have said repairs made and charge said Contractor and/or Surety the cost of same under the terms of this Maintenance Bond.

NOW, THEREFORE, the condition of this obligation is such that the Surety guarantees: that the Project against defective workmanship and materials during the maintenance period set forth herein; that Contractor shall keep and perform its said work and keep the same in repair for the said maintenance period of two (2) years, as provided; and, that Contractor holds harmless and indemnifies said City from any claim or liability for personal injury or property damage caused by and occurring during the performance of said maintenance and repair operation, then these presents shall be null and void and have no further effect, but if default shall be made by said work or materials or Contractor, then these presents shall remain in full force and effect, and the said City shall have and recover from the said Contractor and Surety, jointly and severally, their heirs, administrators, executors, successors and assigns, all damages, costs and expenses. And in this regard, Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to the Owner.

PROVIDED, HOWEVER, that Surety acknowledges and represents that it is duly authorized to do business in the State of Texas, that it is authorized and admitted to write surety bonds in the State of Texas, and that its obligations under this Bond are intended to be in all respects in full and complete compliance with every law, charter, rule or regulation that this Bond may be subject to. If the Surety's obligation under this Bond is in an amount in excess of ten percent (10%) of Surety's capital and surplus, Surety shall immediately upon the effective date of this Bond furnish written certification to City that the Surety has reinsured the portion of risk that exceeds ten percent (10%) of the Surety's capital and surplus with one or more reinsurers who are duly authorized, accredited or trustees to do business in the State of Texas. In addition to the foregoing, If this Bond is in an amount in excess of \$100,000, the Surety also warrants and represents that it holds a certificate from the United States Secretary of the Treasury to qualify as a surety on obligations permitted or required under



federal law or that it has obtained reinsurance for any liability in excess of \$100,000 from a reinsurer that is authorized and admitted as a reinsurer in the State of Texas and is the holder of a certificate of authority from the United States Secretary of the Treasury to qualify as a surety or reinsurer on obligations permitted or required under federal law. In such event, the Surety shall also furnish to the City immediately upon the effective date of this Bond a list of companies which includes the Surety or reinsurer holding such certificates of authority as acceptable sureties and reinsurers on federal bonds published in the Federal Register by the United States Department of the Treasury.

IN WITNESS WHEREOF, the said Principal and Surety have signed and sealed this instrument

on this the _____ day of _____, 2026.

PRINCIPAL:

Signature: _____

Printed Name: _____

Title: _____

Company: _____

Street Address: _____

(P.O. Box is not acceptable)

City, State, Zip Code

Phone Number: _____

SURETY:

Signature: _____

Printed Name: _____

Title: _____

Company: _____

Street Address: _____

(P.O. Box is not acceptable)

City, State, Zip Code



CONTRACTOR'S AFFIDAVIT OF FINAL PAYMENT AND RELEASE
(This form will be prepared by the City and executed by the Contractor after project completion)

STATE OF TEXAS §
 § **KNOW ALL MEN BY THESE PRESENTS:**
COUNTY OF ROCKWALL §

BEFORE ME, the undersigned authority, on this day personally appeared _____ ("Affiant"), who, after being by me duly sworn, deposes and says that he is _____ of _____, a _____ of _____ **County**, State of Texas (the "Contractor"), which said Contractor was awarded the contract dated the _____ day of _____, **2026** for the construction of _____, **CIP No. 2024-002** (the "Work"), for a total consideration of _____ **XX/100 Dollars (\$X,XXX,XXX.XX)** to be paid to the said Contractor (the "Contract"), and that Affiant has full power of authority to make this affidavit.

That City of Rockwall, Texas, (the "City") has approved the final estimate on said Work, and that the said Contractor has fully satisfied and paid any and all claims that may be covered by Chapter 53 of the Texas Property Code, and Chapter 2253 of the Texas Government Code, or any other applicable statutes or charter provisions, and that all just bills for labor and materials have been paid and discharged by said Contractor insofar as they pertain to the Work in question.

That in addition to any funds which may have been previously paid by the City, the Contractor hereby accepts the amount of _____ **XX/100 Dollars (\$XXX,XXX.XX)** as **FULL AND FINAL PAYMENT** under the aforementioned Contract, and hereby waives and releases any right Affiant and/or the Contractor may have to pursue claims of any nature against the City arising out of or in any manner connected with the performance of the Work and/or the Contract, including but not limited to claims of third parties that supplied material and/or labor for the Work for or through the Contractor ("Subcontractors"), as well as claims for delay, additional compensation, or for recovery of liquidated damages which may have been withheld by the City. The Contractor shall defend, hold harmless, and indemnify the Owner from any such claims of such Subcontractors. The Contractor further releases the City from any claim or liability arising from any act or neglect of the City related to or connected with the Contract. This affidavit is given pursuant to the final payment provisions of the Contract, and shall not be deemed to alter or modify the terms and provisions of said Contract.

By:

(Affiant) (Contractor's Signature)

(Title)

(Printed Name)

SUBSCRIBED AND SWORN TO BEFORE ME, this _____ **day of** _____, **202**__.

(Notary Public in and for the State of Texas)

(Printed Name of Notary)

My commission expires _____

CERTIFICATE OF INTERESTED PARTIES**FORM 1295**

Complete Nos. 1 - 4 and 6 if there are interested parties.
Complete Nos. 1, 2, 3, 5, and 6 if there are no interested parties.

OFFICE USE ONLY

1 Name of business entity filing form, and the city, state and country of the business entity's place of business.

2 Name of governmental entity or state agency that is a party to the contract for which the form is being filed.

3 Provide the identification number used by the governmental entity or state agency to track or identify the contract, and provide a description of the goods or services to be provided under the contract.

4 Name of Interested Party	City, State, Country (place of business)	Nature of Interest (check applicable)	
		Controlling	Intermediary

5 Check only if there is NO Interested Party. ☐

6 AFFIDAVIT

I swear, or affirm, under penalty of perjury, that the above disclosure is true and correct.

Signature of authorized agent of contracting business entity

AFFIX NOTARY STAMP / SEAL ABOVE

Sworn to and subscribed before me, by the said _____, this the _____ day
of _____, 20 _____, to certify which, witness my hand and seal of office.

Signature of officer administering oath

Printed name of officer administering oath

Title of officer administering oath

ADD ADDITIONAL PAGES AS NECESSARY



SECTION CS

CONTRACT – CONSTRUCTION STANDARDS

For this Contract the City of Rockwall has adopted the ***North Central Texas Council of Governments Public Works Construction Standards, 5th Edition (November 2017)***, as amended by the City of Rockwall. The modifications to these construction standards are below in the following addendums broken out by Section I - Standard Specifications and Section II – Standard Drawings.

CITY OF ROCKWALL
ADDENDUM
TO
NORTH CENTRAL TEXAS
STANDARD SPECIFICATIONS
FOR
PUBLIC WORKS CONSTRUCTION

All work included as a part of this contract shall be performed in accordance with the Standard Specifications for Public Works Construction, North Central Texas, November 2017, Fifth Edition, except where noted otherwise in the City of Rockwall's Supplemental Special Provisions, the Special Conditions included in the Specifications and Contract Documents.

The North Central Texas Standard Specifications shall be modified and clarified by the addition to the following requirements to the various items. Except when specifically stated, none of the requirements of the North Central Texas Standard Specifications shall be deleted.

Division 100 General Provisions

NOTE: The **(1)** symbol specifies that this item is also covered in the City of Rockwall's "Special Provisions" to the "Standard Specifications for Public Works Construction, North Central Texas". These Special Provisions are additional and modify the "Standard Specification"

Table 7.1: Revisions to NCTCOG's Division 100 General Provisions

<u>Revised</u>	Standard Specificatio n <u>Item No.</u>	<u>Description</u>
	101	DEFINITIONS AND ABBREVIATIONS
	101.1	Definitions
	101.2	Abbreviations and Acronyms
	102	PROPOSAL PROCEDURES
	102.1	Proposal Form
	102.2	Quantities in Proposal Form
	102.3	Examination of Plans, Specifications and Site of the Work
	102.4	Preparation of Proposal

	102.5	Proposal Guaranty
	102.6	Filing of Proposals
	102.7	Withdrawing Proposals
	102.8	Opening Proposals
	102.9	Consideration of Proposal
	102.10	Irregular Proposals
	102.11	Rejection of Proposals
	102.12	Disqualification of Bidders
	102.13	Return of Proposal
	103.	AWARD AND EXECUTION CONTRACT
	103.1	Contractor's Warranties and Understanding
(1)	103.2	Award of Contract
	103.3	Surety Bonds
(1)	103.4	Insurance
	103.5	Execution of Contract
	103.6	Notice to Proceed and Commencement of Work
	103.7	Delay of Contract
	103.8	Order of Work to be Performed
	104.	SCOPE OF WORK
	104.1	Intent of Contract Documents
	104.2	Change of Modification of Contract
	104.3	Disrupted Work and Claims for Additional Compensation
	104.4	Performance of Extra Disputed Work
	105.	CONTROL OF WORK
(1)	105.1	Contract of Documents
(1)	105.2	Workmanship, Warranties and Guarantees
(1)	105.3	Shop Drawings, Product Data and Samples
(1)	105.4	Construction Stakes
(1)	105.5	Means and Methods of Construction
	105.6	Supervision by Contractor
(1)	105.7	Owner's Representatives
	105.8	Service of Notices
	105.9	Inspection
(1)	105.10	Acceptance
	106	CONTROL OF MATERIAL
	106.1	Substitution of Materials
	106.2	Materials and Equipment
	106.3	Salvageable Material
	106.4	Off-Site Storage
	106.5	Samples and Tests of Materials
	106.6	Surplus Material
	107	LEGAL RELATIONS AND CONTRACT RESPONSIBILITIES
	107.1	Contractor Independence
	107.2	No Third Party Contractual Rights

(1)	107.3	Indemnification
	107.4	Owner's Officers, Employees or Agents
	107.5	Venue and Governing Law
	107.6	No Waiver of Legal Rights
	107.7	Severability
	107.8	Headings
	107.9	Obligation to Perform Functions
(1)	107.10	Performance of the Work
	107.11	Successors and Assigns
	107.12	Supervision and Construction of Procedures
	107.13	Labor and Materials
(1)	107.14	Equal Employment Opportunity
(1)	107.15	State and Local Sales and Use Taxes
	107.16	Patents
(1)	107.17	Compliance with Laws
	107.18	Sanitary Provisions
	107.19	Public Convenience and Safety
(1)	107.20	Protection of Work and Persons and Property
	107.21	Project Signs
	107.22	Working Area
	107.23	Railway Crossings
	107.24	Existing Structures, Facilities and Appurtenances
	107.25	Project Clean-Up
	107.26	Disposal of Materials
	107.27	Restoration of Property
	107.28	Environmental Compliance
	108.	PROSECTUTION AND PROGRESS
	108.1	Progress Schedule
	108.2	Prosecution of the Work
	108.3	Other Contractors; Obligation to Cooperate
	108.4	Employees
	108.5	Subcontracts
	108.6	Assignments
	108.7	Owner's Right to Temporarily Suspend Work
	108.8	Delays; Extension of time; Liquidated Damages
	108.9	Contractor Default: Owner's Right to Suspend Work and Annul Contract
	108.10	Suspension by Court Order Against The Owner
	108.11	Termination For Convenience of the Owner
	108.12	Claims Against Owner and Action Theron
	108.13	Use of Completed Portions of Work
	109	MEASUREMENT AND PAYMENT
	109.1	Payment for Labor and Material; No Liens
	109.2	Payment for Materials
	109.3	Payment for Extra Work
	109.4	Payment Withheld

(1)	109.5	Monthly Estimate, Partial Payments, Retainage, Final Inspection, Acceptance and final Payment
	109.6	Wire Transfers
	110	AIR QUALITY REQUIREMENTS FOR EQUIPMENT
	110.1	Equipment Requirements
	110.2	Operational Requirements
	110.3	Reporting to Owner
	110.4	Enforcement

ITEM 103 AWARD AND EXECUTION CONTRACT

103.2 Award of Contract

Delete Item 103.2 in its entirety and substitute therefore the following:

It is the intention of the Owner to award a contract for the work included in this project on the basis of the lowest acceptable bid submitted by a qualified bidder, as determined by the Owner.

Within five (5) working days after the bid opening, the low bidder shall submit such evidence as the Owner may require establishing the bidder's qualifications to satisfactorily perform the work included in this project. Information that may be required shall include the following:

- (1) Current Financial Statement.
- (2) Letter of Auditor's opinion.
- (3) Previous years Balance Sheet, Income Statement and Change of Financial Position.
- (4) List of projects that have been satisfactorily completed by the Bidder that are of the same general type as included in this contract, together with names, addresses and phone numbers or persons familiar with this work.
- (5) Other information that may be pertinent to the Bidder's Qualifications.

Should the bidder fail to produce evidence satisfactory to the Owner on any of the foregoing points he may be disqualified and the work awarded to the next bidder so qualifying.

The Owner will notify the successful bidder, in writing, within sixty (60) days after the date of receiving bids, of the acceptance of the proposal. The Contractor or Contractors shall complete execution of the required bonds and Contract within ten (10) days of such notice.

103.4 Insurance

Add the following sub-item:

103.4.6 Bonds and Insurance

103.4.6.1 Performance, Payment and Other Bonds

Contractor shall furnish Performance and Payment Bonds as security for the faithful performance and payment of all his

obligations under the Contract Documents. These Bonds shall be, at all times, in amounts equal to the total Contract Price, and in such form as set forth in the Contract Documents and with such corporate sureties as are licensed to conduct business in the state where the Project is located and are named in the current list of "Surety Companies Acceptable on Federal Bonds" as published in the Federal Register by the Audit Staff Bureau of Accounts, U.S. Treasury Department. The Performance and Payment Bonds shall be expanded to include any extension of the Contract Period of total Price.

If the surety on any Bond furnished by Contractor is declared bankrupt or becomes insolvent or its right to do business is terminated in any state where any part of the Project is located is revoked, Contractor shall within five (5) days thereafter substitute another Bond and surety, both of which may be acceptable to the City.

103.4.6.2 Additional Bonds and Insurance

Prior to delivery of the executed Contract by City to the Contractor, City may require CONTRACTOR to furnish such other Bonds and such additional insurance in such form and with such sureties or insurers as the City may require.

ITEM 105 CONTROL OF WORK

105.1 Contract of Documents

105.1.1 Priority of Contract Documents

Change the first sentence of Item 105.1.1 to read:

In case of conflict between contract documents, priority of interpretation shall be in the following order: signed agreement, performance and payment bonds, addenda, special conditions, project (or contract) drawings and specifications, City of Rockwall Special Provisions to the Standard Specifications for Public Works Construction – North Central Texas, standard drawings, advertisement for bids, contractor's bid proposal and bid form.

105.1.3 Contract Drawings and Specifications

Add the following:

In general, the number of copies of the plans and specifications furnished to the Contractor shall be limited to five (5). Additional copies may be obtained at cost of reproduction.

105.2 Workmanship, Warranties and Guarantees

105.2.2 Special Warranty

Add the following:

The Contractor shall provide a Maintenance Bond in the amount of ten (10) percent of the total amount of the contract guaranteeing the work in accordance with the plans and specifications for a period of two (2) years after acceptance by the City of Rockwall. This bond shall provide for repair and/or replacement of all defects due to faulty material and workmanship that appear within a period of two (2) years from the date of completion and acceptance of the improvements by the City of Rockwall.

105.3 Shop Drawings, Product Data and Samples

Add the following:

Review of Shop Drawings by the Engineer shall be of the sole purpose of determining the sufficiency of the said drawings or schedules to result in finished improvements in conformance with the plans and specifications, and shall not relieve the Contractor of his duty as an independent contractor. It being understood and agreed that the Engineer does not assume any duty to pass upon the propriety or adequacy of such drawings or schedules or any means or methods reflected thereby in relation to the safety of either person or property during the contractor's performance hereunder.

105.4 Construction Stakes

Add the following to the first paragraph:

The Contractor shall be required to utilize the control monuments provided in the plans to set horizontal and vertical control and construction staking with the contractor's own surveyor.

105.5 Means and Methods of Construction

Add the following:

105.5.1 Water for Construction

The Contractor shall make the necessary arrangements for securing and transporting all water required in the construction, including water required for mixing of concrete, sprinkling, testing, flushing, flooding or jetting. The Contractor shall provide water as required at his own expenses.

All construction meters are to be approved and tagged by the City of Rockwall. The tag is to remain on the meter at all times. If the tag is damaged or lost, immediately notify the Public Works Department. Any construction meter in use without a tag will be removed by City personnel. The use of any non-approved meters will result in the City of Rockwall charging for an estimated water usage and possible fines. All construction meters are to be equipped with a backflow prevention device with double check valves and dual test ports. All backflow devices shall have a Backflow Prevention Assembly

Test and Maintenance Report from a certified backflow tester, when registering a meter at the City of Rockwall Service Center.

Any party requesting the use of a temporary meter on a fire hydrant in the City of Rockwall shall execute an agreement with the City of Rockwall and shall deposit with the City of Rockwall the amount required by ordinance. Such deposit shall be returned upon payment of all charges for water use, and upon return of the meter, fittings, and wrench in their original condition.

Stationary meters shall be locked to fire hydrants at all times. Installation, set up and service fees shall be in the amounts established by ordinance.

It shall be unlawful for any person to open or close any fire hydrant used to obtain water for any purpose with any tool or device other than a standard accepted fire hydrant wrench, which can be supplied by the City of Rockwall.

All stationary fire hydrant meters shall be read monthly at their location in the field. All mobile fire hydrant meters are to be brought to the Utility Maintenance Department, Rockwall, Texas, between the 1st and 10th of each month to be read. The location of all meters shall be disclosed in writing to the City of Rockwall's Water Department. If meter is relocated, written notification of new location must be made immediately to the City of Rockwall's Water Department.

Temporary fire hydrant meters shall be read monthly by representatives of the City of Rockwall, and bills rendered at the current rates for all consumption. Customers using such meters shall comply with the written procedures implemented by the City with regard to making the meters available to be read by representatives of the Rockwall Water Department. It shall be unlawful for any person to fail to make such meter available to be read by representatives of the Rockwall Utilities Department, as required by written procedures issued by the City.

Upon conviction of violation of the above requirements punishment shall be by fine not to exceed TWO HUNDRED DOLLARS (\$200.00). Each day on which a violation exists shall constitute a separate offense.

105.7 Owner's Representatives

Add the following:

105.7.3 Observation of Work by Engineer

The Engineer shall make periodic visits to the site to familiarize himself/herself generally with the progress of the executed work and to determine if such work generally meets the essential performance and design features and the technical and functional engineering requirements of the Contract Documents; provided and except, however, that the Engineer shall not be responsible for making any detailed, exhaustive, comprehensive or continuous on-site inspection of the quality or quantity of the work or be in any way responsible, directly or indirectly, for the construction means, methods, techniques, sequences, quality, procedures, programs, safety precautions or lack of same incident thereto or in connection therewith. Notwithstanding any other provision of this agreement or any other Contract Document, the Engineer shall not be in

any way responsible or liable for any acts, errors, omissions or negligence of the Contractor, any subcontractor or any of the Contractor's or subcontractor's agents, servants or employees or any other person, firm or corporation performing or attempting to perform any of the work.

105.10 Acceptance

Add the following:

Once the work is satisfactory to the City of Rockwall and in accordance with the plans, specifications, contract documents, and the City has received; the Contractor's Affidavit of Final Payment and Release, Maintenance Bond, and Contractor's redlines/markups plans of actual work performed by the Contractor will the City issue a certificate of acceptance.

ITEM 107 LEGAL RELATIONS AND CONTRACT RESPONSIBILITIES

107.3 Indemnification

Delete Item 107.3 in its entirety and substitute therefore the following:

The Contractor and his sureties shall indemnify, defend and save harmless the OWNER and all of its officers, agents and employees, ENGINEER and all of its officers and employees from all suits, actions or claims of any character, name and description brought for or on account of any injuries, including death or damages received or sustained by any person, persons or property on account of the operations of the Contractor, his agents, employees or subcontractors; or on account of any negligent act or fault of the Contractor, his agents, employees or subcontractors in the execution of said contract; or on account of the failure of the Contractor to provide the necessary barricades, warning lights or signs; and shall be required to pay any judgment, with cost, which may be obtained against the Owner or Engineer growing out of such injury, including death or damage.

107.14 Equal Employment Opportunity

Delete Item 107.14.5 Reports in this item in its entirety.

107.15 State and Local Sales and use Taxes

Delete in its entirety and substitute therefore the following;

Recent legislation has removed the sales tax exemption previously provided by Section 151.311 of the Tax Code covering tangible personal property purchased by a contractor for use in the performance of a contract for the improvement of City– owned realty.

It is still possible, however, for a contractor to make tax-free purchases of tangible personal property that will be incorporated into and become part of a City construction project through the use of a "separated contract" with the City. A "separated contract" is one, which separates charges for materials from charges for labor. Under such a contract, the contractor becomes a "seller" of those materials, which are incorporated into the project, such as bricks, lumber, concrete, paint, etc. The contractor issues a resale certificate in lieu of paying the sales tax at the time such items are purchased.

The contractor then receives an exemption certificate from the City for those materials (This procedure may not be used, however, for materials, which do not become a part of the finished product. For example, equipment rentals, form materials, etc. are not considered as becoming “incorporated” into the project).

Utilization of this “separated contract” approach eliminates the need for bidders to figure in sales tax for materials, which are to be incorporated into the project. Bid items, which contain non-taxable materials, are identified in the Bid Schedule or this project. The successful bidder will be required to complete a Contract Form provided by the Owner identifying and separating nontaxable materials from the labor and taxable materials which are not incorporated into the finished project. The completed contractor form will be used to develop the “separated contract” and will determine the extent of the tax exemption.

107.17 Compliance with Laws

Add the following sub item:

107.17.2 Antitrust

The Contractor hereby assigns to the Owner any and all claims for overcharges associated with this contract which arise under the Antitrust Laws of the United States, 15 U.S.C.A. Section 1, et seq., (1973).

Add the following sub item:

107.17.3 Wage Rate

All employees of the Contractor on the work to be performed under this contract shall be paid the prevailing wage scale in this locality for work of a similar character, and in no event less than the rates shown in the Special conditions to the Specifications.

107.20 Protection of Work and Persons and Property

107.20.2 Protection of Persons and Property

Add the following:

The Contractor shall at all times exercise reasonable precautions for the safety of employees and others on or near the work and shall comply with all applicable provisions of Federal, State, and Municipal Safety laws and building and construction codes. All machinery equipment and other physical hazards shall be guarded in accordance with the “Manual of Accident Prevention in Construction” of the Associated General Contractors of America except where incompatible with Federal, State and Municipal laws or regulations. The Contractor shall provide such machinery guards, safe walkways, ladders, bridges, gangplanks and other safety devices. The safety precautions actually taken and their adequacy shall be the sole responsibility of the Contractor, acting at his discretion as an independent contractor.

Add the following sub item:

107.20.4 Small Claims for Damages or Injury

If any person files a claim against the OWNER or CONTRACTOR for personal injury or property damage resulting from, arising out of, or caused by the operations of the Contractor, or any work within the limits of the project, the Contractor must either submit to the Owner a duly executed full release within thirty (30) days from the date of written claim, or immediately report the claim to his liability insurance carrier for their action in adjusting the claim. If the Contractor fails to comply with this provision within the stipulated time limit, it will be automatically deemed that the Contractor has appointed the Owner as its irrevocable Attorney in Fact authorizing the Owner to report the claim directly with the liability insurance carrier. This provision is in and of itself a Power of Attorney from the Contractor to the Owner which authorizes the Owner to take said action on behalf of the Contractor without the necessity of the execution of any other document. If the Contractor fails to comply with the provisions of this item the Owner, at its own discretion, may terminate this contract or take any other actions it deems appropriate. Any payment or portion thereof due the Contractor, whether it is a final payment, progress payment, payment out of retainage or refund payment may be withheld by the Owner as is authorized by item 109.4. Bankruptcy, insolvency or denial of liability by the insurance carrier shall not exonerate the Contractor from liability.

ITEM 109 MEASUREMENT AND PAYMENT

109.5 Monthly Estimate, Partial Payments, Retainage, Final Inspection, Acceptance and Final Payment

109.5.2 Retainage

Add the following:

(4) On projects where the contract price, at the time of execution, is greater than \$400,000.00 the Owner may retain ten (10) percent of the amount due the Contractor, with the retainage above five (5) percent deposited in an interest-bearing account and interest earned on such five (5) percent retained funds shall be paid to the Contractor upon completion of the contract.

109.5.3 Final Inspection and Acceptance

Add the following:

Within ten (10) days after the Contractor has given the Engineer written notice that the work has been completed, or substantially completed, the Engineer and the Owner shall inspect the work and within said time, if the work be found to be completed or substantially completed in accordance with the Contract Documents, the Engineer shall issue to the Owner and the Contractor his Certificate of Completion, and there upon it shall be the duty of the Owner within ten (10) days to insure a Certificate of acceptance

of the work to the Contractor or to advise the Contractor in writing of the reason for non-acceptance.

Definition of Substantially Complete. The date of substantial completion of a project or specified area of a project is the date when the construction is sufficiently completed, in accordance with the contract documents, as modified by any change order agreed to by the parties, so that the Owner can occupy or utilize the project or specified area of the project for the use for which it was intended.

Division 200 Site Protection & Preparation

NOTE: The **(1)** symbol specifies that this item is also covered in the City of Rockwall's "Special Provisions" to the "Standard Specifications for Public Works Construction, North Central Texas". These Special Provisions are additional and modify the "Standard Specification"

Table 7.2: Revisions to NCTCOG's Division 200 Site Protection & Preparation

<u>Revised</u>	<u>Standard Specification Item No.</u>	<u>Description</u>
	201	SITE PROTECTION
	201.1	Removal, Protection, and Replacement of Trees, Shrubbery, Plants, Sod and Other Vegetation
	201.2	Determining Location and Protection of Existing Structures and Utilities
	201.3	Maintenance of Streets and Rights of Way During Construction
	202	TEMPORARY EROSION, SEDIMENTATION, AND WATER POLLUTION PREVENTION AND CONTROL
	202.1	Description
	202.2	Items of Work and Materials
	202.3	Pre-construction Submittals
	202.4	Construction Requirements
(1)	202.5	Silt Fence
	202.6	Interceptor Swale
	202.7	Diversion Dike
	202.8	Triangular Sediment Filter Dike
	202.9	Check Dam (Rock)
	202.10	Check Dam (Filter Tube)
(1)	202.11	Stabilized Construction Exit
	202.12	Stop Outlet Sediment Trap
	202.13	Pipe Slope Drain
	202.14	Inlet Protection
	202.15	Erosion Control Blankets
	202.16	Section Held for Future Use
	202.17	Section Held for Future Use
	202.18	Filter Tubes

	202.19	Measurement and Payment
	203	SITE PREPARATION
	203.1	General Site Preparation
(1)	203.2	Unclassified Street Excavation
	203.3	Section Held for Future Use
	203.4	Borrow & Spoil
(1)	203.5	Embankment
	203.6	Dust Control
	204	LANDSCAPING
	204.1	Removal, Protection, and Replacement of Trees, Shrubbery, Plants, Sod and Other Vegetation
(1)	204.2	Topsoil
	204.3	Soil Amendments
	204.4	Fertilizer
	204.5	Sodding
(1)	204.6	Seeding Turf-grass
	204.7	Rejection

ITEM 201 TEMPORARY EROSION, SEDIMENTATION, AND WATER POLLUTION PREVENTION AND CONTROL

202.5 Silt Fence

202.5.2 Materials

202.5.2.2 Posts

Delete the last sentence in its entirety and replace with the following:

No wood stakes shall be allowed.

202.11 Stabilized Construction Exit

202.11.2 Materials

202.11.2.1 Stone

Delete the following subsection in its entirety and replace with the following:

Stone material shall consist of four (4) to six (6) inch minimum course aggregate riprap and shall be place in a layer 12-inch thick. No crushed or recycled concrete shall be allowed.

ITEM 203 SITE PREPERATION

203.2 Unclassified Street Excavation

203.2.3 General

Add to the following as the third paragraph:

Unless otherwise approved in writing by the City of Rockwall, where excavation to grade established in the field by the Owner terminates in loose or solid rock, the Contractor shall excavate six (6) inches below the required subgrade elevations for the entire roadbed width and shall backfill with suitable selected materials as indicated on the plans. Suitable selected material shall include lime treated subgrade or a base material having a plasticity index not greater than 12. Payment for such work will be made under the items of unclassified street excavation, lime treated subgrade and hydrated lime. The six (6) inch lime treated subgrade or base shall be compacted to 95 percent standard proctor density.

ITEM 204 LANDSCAPING

204.2 Topsoil

204.2.3 Construction Methods

Add the following:

A minimum of four (4) inches of topsoil shall be provided on all major thoroughfare medians and rights-of-way and on all earthen channel slopes to the lines and grades established by the construction plans. This will be material imported from off site. The City will approve material prior to placement.

204.6 Seeding Turfgrass

204.6.1 General

Add the following:

The Contractor shall maintain the seeded areas including watering until a "Stand of Grass" is obtained. A "Permanent Stand of Grass" shall consist of 75 percent to 80 percent coverage, a minimum of one (1) inch in height. Re-seeding will be required in washed areas.

204.6.3 Planting Season and Application Rate

Delete the mixture, rate, and planting dates in Table 204.6.3.(A) Seeding Turfgrass and substitute:

Type I: Bermuda Grass – Hulled
50 lbs/acre April - June

Type II: Annual Rye Grass

40 lbs/acre September - March

Type III Bermuda Grass – Unhulled
50 lbs/acre January - March/July - August

NOTE: A mix of seed shall be used in overlapping seasons.

Division 300 Roadway Construction

NOTE: The **(1)** symbol specifies that this item is also covered in the City of Rockwall's "Special Provisions" to the "Standard Specifications for Public Works Construction, North Central Texas". These Special Provisions are additional and modify the "Standard Specification"

Table 7.3: Revisions to NCTCOG's Division 300 Roadway Construction

<u>Revised</u>	<u>Standard Specification Item No.</u>	<u>Description</u>
	301	SUBGRADE, SUBBASE AND BASE PREPARATION
	301.1	General
(1)	301.2	Lime Treatment
(1)	301.3	Portland Cement Treatment
	301.4	Asphalt Emulsion Treatment
(1)	301.5	Flexible Sub-base or Base (Crushed Stone/Concrete)
	301.6	Geo-textiles Used in Paving applications
	302	ASPHALT PAVEMENT
	302.1	Description
	302.2	Aggregates for Hot-Mix Asphalt Pavement
	302.3	Bituminous Materials
	302.4	Section Held for Future Use
	302.5	Storage, Heating and Application Temperature of Bituminous Materials
	302.6	Emulsified Asphalt Treatment
	302.7	Prime Coat
	302.8	Asphalt Base Course
	302.9	Hot-Mix Asphalt Pavement
	302.10	Measurement and Payment
	303	PORTLAND CEMENT CONCRETE PAVEMENT
	303.1	Description
(1)	303.2	Portland Cement Concrete Pavement Materials
(1)	303.3	Mix Design and Mixing Concrete
	303.4	Equipment
(1)	303.5	Construction Methods
	303.6	Alley Paving
	303.7	Pavement Leave-outs
(1)	303.8	Pavement Testing and Evaluation
	303.9	Measurement and Payment

	304	PAVING UNITS
(1)	304.1	Solid Concrete Interlocking Paving Units
	305	MISCELLANEOUS ROADWAY CONSTRUCTION
(1)	305.1	Concrete Curb and Gutter
(1)	305.2	Concrete Sidewalks, Driveway Approaches, and Barrier Free Ramps
(1)	305.3	Concrete Medians
	305.4	Reinforced Concrete Headers

ITEM 301. SUBGRADE, SUBBASE AND BASE PREPERATION

301.2 Lime Treatment

Add the following sentences:

Quick Lime shall not be used in the construction of roadway work in the City. Dry hydrated lime shall not be used for treating subgrade or base material unless specified on the plans

301.2.1 Materials

301.2.1.2 Quicklime

301.2.1.2.1 General

Add to the beginning of the first paragraph:

Quicklime (dry) shall not be used in the City without written approval from the City.

301.2.3 Lime Treatment Construction Methods

301.2.3.3 General Construction

301.2.3.3.1 Treatment for Materials in Place

Add the following:

Prior to final compaction of subgrade, samples of the subgrade material shall be collected by a testing laboratory approved by the City, and laboratory tests made to determine the amount of lime required.

The application rate for hydrated lime shall be selected to obtain at least the optimum lime percentage indicated by test method ASTM C977-83a, Appendix XI; however, not less than 27 LBS per SY shall be applied. A Geotechnical Engineer's report reflecting the recommended application rate and including supporting test data shall be submitted in

writing to the City, for approval prior to beginning any lime treatment. Laboratory test may be waived provided a minimum of 36 LBS per SY is applied. Testing shall look for sulfates to see if Lime Treatment will cause and adverse effect on the subgrade.

301.2.3.7 Maintenance

Add the following to the first paragraph:

The lime treated subgrade shall be moist cured until covered by other base or pavement up to 14-days after final compaction. After 14-days without covering an application of 0.10 to 0.20 gallons per square yard emulsified asphalt shall be applied at the Contractor's expense. Reapplication of emulsified asphalt may be required if lime treated subgrade is not covered shortly after first application. Lime treated subgrade may be covered by other base or pavement when density of 95 percent of maximum at optimum moisture content is obtained.

301.3 Portland Cement Treatment

Add the following:

Portland cement modification of subgrade soils is not approved in Rockwall. Subgrade soils means natural ground or embankment encountered in the construction.

301.5 Flexible Subbase or Base (Crushed Stone/Concrete)

301.5.1 Material

301.5.1.1 General

Add the sentence:

No local limestone material shall be used as flexible base (crushed limestone) on Rockwall paving projects, unless otherwise shown on the plans.

301.5.1.2 Tests and Physical Requirements

After the first sentence add the sentence:

Samples of crushed limestone shall be submitted to the engineer testing laboratory employed by the City for testing and conformance with the specifications.

ITEM 303 PORTLAND CEMENT PAVEMENT

303.2 Portland Cement Concrete Pavement Materials

303.2.1 Aggregates for Portland Cement Concrete

303.2.1.3 Coarse Aggregates

Gradation:

Add the sentence:

For Rockwall paving projects, the coarse aggregate's gradation shall meet the requirements of Size No. 4 shown in the table.

303.3 Mix Design and Mixing Concrete for Pavement

303.3.5 Mixing and Delivery

303.3.5.3 Central Mixing Plant

Add the following:

When a fly ash admixture is used with Type I cement in the production of Portland cement concrete, separate silos shall be provided for fly ash and cement and provisions shall be made for individual measurements.

303.5 Construction Methods

303.5.6 Finishing

Delete 303.5.6. and add the following:

The finished concrete pavement construction under these specifications is expected to meet certain quality standards for surface of the concrete including the durability, texture, riding surface and appearance. The surface must be durable, firm, dense and well bonded to the aggregate to maintain an appearance and texture which is satisfactory to the Owner. Concrete pavement having a poor surface which has spalled (exposed aggregate) due to poor quality paste, high water-cement ratio, over-vibration, improper curing, extreme weather or any other reason, or does not have a satisfactory riding surface shall be removed and replaced at the Contractor's expense. It is extremely important that the pavement have a good rideable surface, free from undulations and rough joints. The City Engineer shall determine the acceptability of the pavement.

303.5.6.1 Machine Finishing

Machine finishing of pavement shall include the use of power-driven spreaders, reciprocating type power-driven vibrators, power-driven transverse strike-off, and screed.

The concrete pavement shall be consolidated by a reciprocating type mechanical vibrator. As soon as the concrete has been spread between the forms, the mechanical vibrator shall be operated to consolidate the concrete and remove all voids. Hand manipulated vibrators shall be used for areas not covered by the mechanical vibratory unit.

The transverse finishing machine shall first be operated to compact and finish the pavement to the required section and grade, without surface voids. The machine shall be operated over each area as many times and at such intervals as directed. At least two trips will be required and the last trip over a given area shall be a continuous run of not less than 40-feet. After completion of finishing with the transverse finishing machine a transverse drag float may be used.

After the floating has been completed and the excess water removed, but while the concrete is still plastic, the surface of the concrete shall be tested for trueness with an approved ten (10) foot steel straightedge furnished by the Contractor. The straightedge shall be operated from the side of the pavement, placed parallel to the pavement centerline and passed across the slab to reveal any high spots or depressions. The straightedge shall be advanced along the pavement in successive stages of not more than one-half its length. Practically perfect contact of the straightedge with surface will be required, and the pavement shall be leveled to this condition, in order to insure conformity with the surface test required below after the pavement has fully hardened and to insure a smooth rideable surface. Any correction of the surface required shall be accomplished by adding concrete if required and by operating the longitudinal float over the area. The surface test with the straightedge shall then be repeated.

After completion of the straightedge testing and surface correction the surface of the pavement shall be finished by an approved method. Methods available for pavement surface finish including a burlap drag finish, a broom finish or a belt finish. Unless otherwise shown on the plans, the pavement surface shall be finished with the burlap drag.

303.5.6.1.1 Burlap Drag Finish

If the surface texture is to be a drag finish, a drag shall be used; it shall consist of a seamless strip of damp burlap or cotton fabric, and it shall produce a uniform surface of gritty texture after dragging it longitudinally along the full width of pavement. For pavement 16-feet or more in width, the drag shall be mounted on a bridge which travels on the forms. The diameter of the drag shall be such that a strip of burlap or fabric at least three (3) feet wide is in contact with the full width of pavement surface while the drag is used. The drag shall consist of not less than two layers of burlap with the bottom layer approximately six (6) inches wider

than the upper layer. The drag shall be maintained in such a condition that the resultant surface is of uniform appearance and reasonably free from gravels over 1/16-inch in depth. Drags shall be maintained clean and free from encrusted mortar. Drags that cannot be cleaned shall be discarded and new drags substituted.

303.5.6.1.2 Broom Finish

If the surface texture is to be broom finished, it shall be applied when the water sheen has practically disappeared. The broom shall be drawn from the center to the edge of the pavement with adjacent strokes slightly overlapping. The broom operation shall be so executed that the corrugation produced in the surface shall be uniform in appearance and not more than 1/16-inch in depth. Brooming shall be completed before the concrete is in such condition that the surface will be torn or unduly roughened by the operation. The surface thus finished shall be free from rough and porous areas, irregularities, and depressions resulting from improper handling of the broom. Brooms shall be of the quality, size, and construction and shall be operated to produce a surface finish meeting the approval of the Owner. Subject to the approval of the Owner, the Contractor may be permitted to substitute mechanical brooming in lieu of the manual brooming as herein described.

303.5.6.1.3 Belt Finish

If the surface texture is to be belt finish, when straightedging is completed and after sheen has practically disappeared and just before the concrete becomes non-plastic, the surface shall be belted with a two (2) ply canvas belt not less than eight (8) inches wide and at least three (3) feet longer than the pavement width. Hand belts shall have suitable handles to permit controlled, uniform manipulation. The belt shall be operated with short strokes transverse to the centerline and with a rapid advance parallel to the centerline.

303.5.6.2 Hand Finishing

Hand finishing of concrete pavement will be permitted in areas where it is not practical or possible to construct with finishing machines. These areas include, but are not limited to, intersections, left turn lanes, crossovers, transition areas and where the pavement width is not uniform. In all hand finished areas, one-half ($\frac{1}{2}$) extra sack of cement per cubic yard of concrete shall be used in the mix. In hand finished areas, the concrete shall be struck off with an approved strike-off screed to such elevation that when consolidated

and finished the surface of the pavement shall conform to the required section and grade. The strike template shall be moved forward with a combined transverse and longitudinal motion in the direction the work is progressing, maintaining a slight excess of material in front of the cutting edge. The concrete shall then be tamped with an approved tamping template to compact the concrete thoroughly and eliminate surface voids and the surface screeded to required section. After completion of a strike-off, consolidation and transverse screeding, a hand-operated longitudinal float shall be operated to test and level the surface to the required grade.

Workmen shall operate the float from approved bridges riding on the forms and spanning the pavement. The longitudinal float shall be held in contact with the surface and parallel to the centerline and operated with short longitudinal strokes while being passed from one side of the pavement to the other. If contact with the pavement is not made at all points, additional concrete shall be placed, if required, and screeded, and the float shall be used to produce a satisfactory surface. Care shall be exercised to keep the ends of the float from digging into the surface of the pavement. After a section has been smoothed so that the float maintains contact with the surface at all points in being passed from one side to the other, the bridges may be moved forward half the length of the float and the operation repeated. Other operations and surfaces tests shall be as required for machine finishing.

303.5.6.3 Edging at Forms and Joints

After the final finish, but before the concrete has taken its initial set, the edges of the pavement along each side of each slab, and on each side of transverse expansion joints, formed joints, transverse construction joints, and emergency construction joints shall be worked with an approved tool and rounded to the radius required by the plans. A well-defined and continuous radius shall be produced and a smooth, dense mortar finish obtained. The surface of the slab shall not be unduly disturbed by tilting of the tool during use.

At all joints, any tool marks appearing on the slab adjacent to the joints shall be eliminated by brooming the surface. In doing this, the rounding of the edge shall not be disturbed. All concrete on top of the joint filler shall be completely removed.

All joints shall be tested with a straightedge before the concrete has set, and correction shall be made if one side of the joint is higher than the other or if they are higher or lower than the adjacent slabs.

303.8 Pavement Testing and Elevation

303.8.2 Pavement Thickness Test

Delete in its entirety and substitute therefore the following:

Upon completion of the work and before final acceptance and final payment shall be made, pavement thickness tests shall be made by the

Contractor. Tests shall be made at 400-foot spacings along the length of the pavement. In the event a deficiency in the thickness of pavement is revealed, two (2) subsequent sets necessary to isolate the deficiency shall be made - one at a jointed section prior to the deficient station and one at a jointed section following the deficient station. Additional tests shall be obtained as necessary, at jointed section intervals to isolate the deficient area. Removal and replacement of concrete shall extend to joint boundaries, the full width of pavement section. If the average thickness of pavement in a particular section is less than called for on the plans, the pavement section shall be removed and replaced with the correct thickness, extending to joint boundaries, the full width of the pavement section, at the Contractor's entire expense. No additional payment over the contract unit price shall be made for any pavement of a thickness exceeding that required on the plans.

303.8.3 Pavement Strength Test

303.8.3.1 For Standard Classes of Concrete

Revise the first paragraph to read:

During the progress of the work, the Inspector or a commercial laboratory shall cast test cylinders or beams to maintain a check on the strengths of the concrete being placed. Add the following sentence and table: A table titled "PAVEMENT STRENGTH REQUIREMENTS", is provided showing the required pavement thickness, seven (7) day strength, fourteen (14) day strength, 2-28-day strength (no averaging), minimum cement factor and maximum slump for each street type to be constructed in Rockwall.

Add to the 5th paragraph:

Test cores shall be obtained within ten (10) working days after the 28-day test results have been provided by the commercial laboratory. All test cores shall be obtained by a commercial laboratory, at the Contractors expense. One (1) core shall be obtained in the immediate area of the deficiency and two (2) additional cores shall be obtained - one at a jointed section prior to the deficient station and one at a jointed section following the deficient station. Additional cores shall be obtained as necessary, at jointed section intervals to isolate the deficient area. Removal and replacement of concrete shall extend to joint boundaries, the full width of pavement section.

Amend the second sentence of the 7th paragraph to read:

"Pavement not meeting the minimum specified 28-day strength after cores have been tested shall be removed and replaced at the Contractor's expense."

Delete the table 303.8.3.1.(a) and the paragraph below it.

Add the following table:

Pavement Strength Requirements

Street Type	Minimum Thickness (inches)	Strength 28-Day (psi)	Minimum Cement (sacks / CY)		Steel Reinforcement		Slump (inches)
			Machine placed	Hand Placed	Bar #	Spacing (O.C.E. W.)	
* Arterial	10"	3,600	6.0	6.5	#4 Bars	18"	3" to 5"
* Collector	8"	3,600	6.0	6.5	#4 Bars	18"	3" to 5"
Residential	6"	3,600	6.0	6.5	#3 Bars	24"	3" to 5"
Alley	7"-5"-7"	3,600	6.0	6.5	#3 Bars	24"	3" to 5"
Fire Lane	6"	3,600	6.0	6.5	#3 Bars	24"	3" to 5"
Driveways	6"	3,600	6.0	6.5	#3 Bars	24"	3" to 5"
Driveway Approaches Within ROW	To Match Design of Street Pavement Type Connecting Into						
Barrier Free Ramps	6"	3,600	N/A	6.5	#3 Bars	24"	3" to 5"
Sidewalks	4"	3,000	N/A	5.5	#3 Bars	24"	3" to 5"
Trails	6"	3,600	N/A	6.5	#3 Bars	24"	3" to 5"
Parking Lot/ Drive Aisles	5"	3,000	5.0	5.5	#3 Bars	24"	3" to 5"
Dumpster Pads	7"	3,600	6.0	6.5	#3 Bars	24"	3" to 5"

- * PAVING SECTION DESIGNS FOR ARTERIALS AND COLLECTORS SHALL BE BASED OFF 30-YEAR PROJECTED TRAFFIC VOLUMES AND GEOTECHNICAL ANALYSIS/REPORT (PAVING SECTION DESIGN SHALL INCLUDE BUT NOT LIMITED TO THE FOLLOWING: PAVEMENT THICKNESS, REINFORCING SIZE AND SPACING, PAVEMENT STRENGTH, SUBGRADE THICKNESS, SUBGRADE TREATMENT TYPE [LIME OR CEMENT]).

ITEM 304 PAVING UNITS

304.1 Solid Concrete Interlocking Paving Units

304.1.2 Materials

304.1.2.2 Base

Delete in its entirety and replace with the following:

The base shall be constructed of 3,600 PSI reinforced concrete meeting the requirements of Item 303 of the Standard Specifications. #4 reinforcing bars shall be placed 18-inches on center, both ways, in all concrete.

304.1.3 Construction Methods

304.1.3.3 Construction Procedures

304.1.3.3.3 Paving Units and Joints

Delete paragraph two in its entirety and replace with the following:

Joints between paving units shall have a spacing of 1/8-inch.

304.1.4 Measurement and Payment

Delete in its entirety and replace with the following:

Interlocking Concrete Paving Stone shall be measured and paid for by the square foot of stone, sand and concrete base furnished and installed, which price shall include all labor, including excavation, materials, equipment, tools and incidentals necessary to complete the work. No separate payment shall be made for six (6) inch concrete base or washed sand. Payment for removal and disposal of existing concrete median pavement, if required, shall be made by the square foot. Payment shall include all labor, equipment, materials, tools, and incidentals necessary to complete the work.

ITEM 305. MISCELLANEOUS ROADWAY CONSTRUCTION

305.1 Concrete Curb and Gutter

305.1.3 Construction Methods

305.1.3.2 Reinforcing Steel

The third sentence, first paragraph shall be revised to read:

All bars at splices shall be lapped a minimum of 30 diameters of the bar or 12-inches, whichever is greater.

305.2 Concrete Sidewalks, Driveway Approaches, and Barrier Free Ramps

305.2.2 Materials

305.2.2.2 Reinforcement

Revise the first sentence to read:

Driveway approaches and walk reinforcing shall be No. 3 bars on 24-inch centers.

305.2.3 Construction Methods

305.2.3.1 General

Add to end of first paragraph:

The drive approach shall have a minimum thickness equal to the thickness of the adjacent street or six (6) inches, whichever is greater.

305.2.3.7 Joints

Revise second sentence to read:

Expansion joints shall be placed in the sidewalk at 20-foot intervals or as otherwise specified by the Owner.

305.3 Concrete Medians

Delete in entirety.

Division 400 Roadway Maintenance & Rehabilitation

NOTE: The **(1)** symbol specifies that this item is also covered in the City of Rockwall's "Special Provisions" to the "Standard Specifications for Public Works Construction, North Central Texas". These Special Provisions are additional and modify the "Standard Specification"

Table 7.4: Revisions to NCTCOG's Division 400 Roadway Maintenance & Rehabilitation

<u>Revised</u>	<u>Standard Specification Item No.</u>	<u>Description</u>
	401	CRACK SEALING
	401.1	General
	401.2	Materials
	401.3	Methods
	401.4	Measurement and Payment
	402	PAVEMENT CUT, EXCAVATION AND REPAIR
	402.1	General Requirements
	402.2	Minimum Size of Repair
(1)	402.3	Sawing
	402.4	Replacing Paved Surfaces
	403	ASPHALTIC PAVEMENT REPAIR
	403.1	Description
	403.2	Materials and Mixing
	403.3	Methods
	403.4	Measurement and Payment
	404	SURFACE TREATMENT
	404.1	Description
	404.2	General
	404.3	Slurry Seals and Micro-(Re)Surfacing
	404.4	Bituminous Surface Treatment (Chip Seal)
	405	ULTRA THIN CONCRETE PAVING (WHITETOPPING)
	405.1	Description
	405.2	Materials

	405.3	Construction Methods
	405.4	Measurements
	405.5	Payment

ITEM 402 PAVEMENT CUT, EXCAVATION AND REPAIR

402.3 Sawing

402.3.2 Equipment

Revise second paragraph to read:

Saw blades shall make a clean, smooth cut, producing a groove a minimum of $\frac{3}{8}$ -inch wide and to the full depth required by these specifications or as shown on the plans.

Division 500 Underground Construction & Appurtenances

NOTE: The **(1)** symbol specifies that this item is also covered in the City of Rockwall's "Special Provisions" to the "Standard Specifications for Public Works Construction, North Central Texas". These Special Provisions are additional and modify the "Standard Specification"

Table 7.5: Revisions to NCTCOG's Division 500 Underground Construction & Appurtenances

<u>Revised</u>	<u>Standard Specification Item No.</u>	<u>Description</u>
	501	UNDERGROUND CONDUIT MATERIALS
	501.1	General
	501.2	Clay Wastewater Pipe
	501.3	Vitrified Clay Pipe for Micro-tunneling, Slip-lining, Pipe Bursting and Tunnels
(1)	501.4	Concrete Pressure Pipe and Fittings
(1)	501.5	Reinforced Concrete Wastewater Pipe With Rubber Gasket Joints
	501.6	Reinforced Concrete Culvert, Storm Drain, Pipe and Box Section
(1)	501.7	Ductile-Iron Pressure Pipe and Fittings
	501.8	Ductile-Iron Pipe for Pipe Rehabilitation
(1)	501.9	Steel Pipe and Fittings
	501.10	Seamless Copper Tubing
	501.11	Corrugated Metal Pipe or Arch Shapes
	501.12	Structural Plate Structures
	501.13	Tunnel Liner Plates
(1)	501.14	Polyvinyl Chloride (PVC) Water Pipe
	501.15	Polyvinyl Chloride (PVC) Pressure-Rated (SDR Series)
	501.16	Molecularly Oriented Polyvinyl Chloride (PVCO) Water Pipe
	501.17	Polyvinyl Chloride (PVC) Wastewater Pipe & Fittings with Dimension Control

	501.18	Polyvinyl Chloride (PVC) Profile Gravity Wastewater Pipe and Fittings-For Direct Bury and Slip-lining Applications
	501.19	PVC Composite Pipe for Wastewater Conduits
	501.20	Polyvinyl Chloride (PVC) Corrugated Storm Water Pipe with Smooth Interior and Fittings
	501.21	Solid Wall Polyethylene Plastic Pipe for Water, Wastewater and Pipe Rehabilitation
	501.22	Polyethylene (PE) Large Diameter Wastewater Pipe with Modified Wall Profiles and Performance Standards
	501.23	Polyethylene (PE) Corrugated Drainage Tubing and Corrugated Smooth Lined Storm Water Pipe and Fittings
	501.24	Fiberglass (Glass-Fiber-Reinforced Thermosetting-Resin) Wastewater Pipe
	501.25	Fiberglass (Glass-Fiber-Reinforced Thermosetting-Resin) Water Pipe
	502	APPURTENANCES
(1)	502.1	Manholes
	502.2	Wastewater Main Cleanouts
(1)	502.3	Fire Hydrants
	502.4	Thrust Restraint
(1)	502.5	Fittings
(1)	502.6	Valves
	502.7	Performed Flexible Conduit Joint Sealant
	502.8	Polyethylene Wrap for Metal Pipe Fittings
	502.9	Corrosion-Resistant Coatings and Liners for Wastewater Conduit and Appurtenances
	502.10	Connections to Conduit for Service
	502.11	Miscellaneous Conduit Connections
	502.12	Structures
	503	TRENCHLESS INSTALLATION
	503.1	Conduit Materials
	503.2	Tunnel/Chasing Pipe Spacers
	503.3	Methods of Jacking, Boring or Tunneling
	503.4	Measurement and Payment
	504	OPEN CUT - BACKFILL
	504.1	General
(1)	504.2	Materials
(1)	504.3	Excavation and Foundation
(1)	504.4	Backfill-General Requirements
(1)	504.5	Embedment
(1)	504.6	Final Backfill
	504.7	Measurement and Payment of Backfill
	505	OPEN CUT – GENERAL CONDUIT INSTALLATION
	505.1	General
	505.2	General Installation Requirements for Pipe Types

	506	OPEN CUT – WATER CONDUIT INSTALLATION
	506.1	Description
	506.2	Materials
(1)	506.3	Laying Water Conduit
	506.4	Pipe Joints
(1)	506.5	Hydrostatic Test
	506.6	Connections to Existing Water Conduits
	506.7	Purging and Disinfection of Water Conduits
	506.8	Plugs
	506.9	Measurements and Payments
	507	OPEN CUT- WASTEWATER CONDUIT INSTALLATION
	507.1	Description
	507.2	Materials
	507.3	Laying Wastewater Conduit
	507.4	Wastewater Conduit Joints
(1)	507.5	Test and Inspections
	507.6	Measurement and Payment for Wastewater Conduit Installation
	508	OPEN CUT – STORM WATER CONDUIT INSTALLATION
	508.1	Description
	508.2	General
	508.3	Reinforced Concrete Pipe for Storm Water
	508.4	Corrugated Metal Pipe
	508.5	Structural Plate Conduit
	508.6	Measurement and Payment for Storm Water Conduit Installation
(1)	508.7	Storm Sewer Conduit Inspection
	509	CROSSINGS
	509.1	General
	509.2	State Highway Crossings
	509.3	Street and Alley Crossings
	509.4	Railroad Crossing
(1)	509.5	Creek and River Crossings
	509.6	Measurement and Payment of Crossings

ITEM 501.UNDERGROUND CONDUIT MATERIALS

501.4 Concrete Pressure Pipe and Fittings

Add the following:

C302 Reinforced Concrete Pressure Pipe, Non-Cylinder Type, for Water and Other Liquids, and C300 Reinforced Concrete Pressure Pipe, Steel Cylinder Type, for Water and Other Liquids are not approved for use in the City, unless otherwise shown in the plans or approved in writing. Reinforced concrete cylinder pipe in sizes 16-inches through 21-inches shall be Bar-Wrapped Concrete Cylinder Pipe AWWA Type C303. For pipe 42-inches in diameter and above the pipe shall be Prestressed Concrete Pressure

Pipe, Steel Cylinder Type, AWWA Type C301. Between 24-inches and 36-inches the pipe furnished may be either type. All pipe shall be designed to withstand the working pressure and external load as shown in the plans.

501.5 Reinforced Concrete Wastewater Pipe With Rubber Gasket Joints

501.5.1 General

Add the following:

All reinforced concrete pipe used in the sanitary sewer system shall conform to ASTM Designation C76 and shall be of the Thick Wall Pipe design with aggregates consisting of limestone aggregate in the proportion of at least 75 percent by weight of the total aggregates, unless otherwise provided in the *Special Conditions to the Specifications*.

501.7 Ductile-Iron Pressure Pipe and Fittings

501.7.1 General

Add the following:

Minimum design thickness for all Ductile-Iron Pipe installed shall be Class 51 on sizes 12-inches and smaller, and Class 52 on sizes 14-inches and larger.

501.9 Steel Pipe and Fittings

501.9.3 Pipe and Fitting Requirements

Substitute the second to last sentence with the following:

All steel pipe to be furnished for this project shall be designed in accordance with AWWA M11 for the most critical application of internal pressures and external loads. The following design conditions shall apply:

Internal Pressure (Design to account for working and surge together)

- (1) Working Pressure of 200 PSI
- (2) Surge allowance of 250 PSI

External Loading for Buried Pipe

- (1) External loads shall be comprised of the weight of the backfill together with live and impact loads. Earth loads shall be calculated based on ditch and positive projecting conduit. The earth load for the pipe design shall be the greater of the above two conditions.
- (2) External live loads shall be at least equivalent to AASHTO HS-20 loading.
- (3) Modulus of soil reaction (E') < 1000 PSI
- (4) Unit weight of fill (w) > 120 PCF
- (5) Deflection lag factor ($D1$) (1.0)
- (6) Bedding constant (K) = 0.100

- (7) $hw = h$ = depth of cover above top of pipe
- (8) Maximum deflection in percent of pipe diameter shall be as determined by AWWA M11, latest edition, as calculated using moment of inertia of steel cross section of pipe wall. Moment of inertia of cement mortar shall not be included in calculation of maximum deflection.

Available Deflections

Mortar-lined and coated = two (2) percent of pipe diameter

Maximum Working Stress

The maximum combined stress based on working pressure shall be no greater than 50 percent of the minimum yield strength or 18,000 PSI, whichever is less.

The maximum combined stress based on test pressure shall be no greater than 75 percent of the minimum yield strength or 24,000 PSI, whichever is less.

501.9.4 Joints

Add the following:

In general, pipe joints shall be as follows, as indicated on the Drawings or as specified.

- (1) Flanged joints shall be provided as a minimum at all flanged valves, meters and other equipment.
 - a. Flanges. Unless otherwise noted, flanges shall conform to the requirements of AWWA C207, Table D, E or F as required.
 - b. Flange Bolts and Nuts. Shall be furnished in size and numbers stipulated in AWWA C207. Unless otherwise indicated, bolts shall be carbon steel to meet the requirements of ASTM Designation A307, Grade B for regular joints.
- (2) Restrained Lap-Welded slip joints (expanded bell) with a single fillet weld.
- (3) Carnegie-Shape Rubber Gasket Joint. Bell and spigot rubber gasket joint will be furnished with the bell end of the pipe mechanically expanded to the required internal diameter and the spigot end furnished as a sized Carnegie shape welded to the opposite end of the pipe. The expanded bell and Carnegie spigot shall be designed such that when the pipe is laid and jointed, it will be self-centered, and the O-ring rubber gasket will be enclosed tightly on all four sides and confined under compression adequate to ensure water tightness. Gaskets to be full-face for use with flat face flanges and ring type for use with raised face flanges. Gasket material for water service pipe shall be cloth inserted rubber sheet, 1/8-inch thick or red rubber, ASTM D1330, Grade 1. Gasket material for air piping shall be as above, but of EPDM.

(4) Mechanical Couplings. Mechanical couplings designed to provide a stress relieving flexible joint shall consist of a cylindrical sleeve, two gaskets, two follower rings and a set of bolts and nuts.

- a. Sleeves. Manufactured of ASTM A53 steel for sizes ten (10) inches and smaller. ASTM A36 steel for sizes 12-inches and larger. Minimum sleeve length shall be five inches for pipe 12-inches and smaller, seven (7) inches for pipe 14-inches through 24-inches, and ten (10) inches for pipe larger than 24-inches.
- b. Follower Rings. Ductile Iron ASTM A536 or AISI C1020 Steel.
- c. Bolts and Nuts. High strength low alloy steel with heavy semi-finished hexagon nuts.
- d. Gaskets. Shall be of synthetic rubber suitable for operating conditions.
- e. Shop Finish. Manufacturer's standard unless otherwise noted.
- f. Manufacturer. Baker 200, Dresser Style 39, Rockwell Series 411 or approved equal.

501.14 Polyvinyl Chlorine (PVC) Water Pipe

Add the following:

All PVC water pipelines shall be AWWA C900-16 PVC Pipe (blue in color), DR 14 (PC 305) for pipeline sizes 12-inch and smaller, and DR 18 (PC 235) for 14-inch and larger water pipelines. All PVC water pipe shall be extruded PVC pipe of the rubber gasket type joint and shall be furnished in 20-foot nominal laying lengths.

All fittings shall be ductile-iron of bell and spigot or mechanical joint, Class 250, in accordance with AWWA Specification C 110, C 111 or C 153 (Compact), and shall be tar coated on the outside surface and shall have an interior cement lining with seal coat per AWWA Specification C104, unless otherwise shown in the plans.

502 APPURTENANCES

502.1 Manholes

502.1.1 Manhole Materials

502.1.1.1 Precast Reinforced Manhole Sections

502.1.1.1.1 Joints

Add the following:

All sanitary sewer manholes installed in the City of Rockwall, shall have "O" ring joints conforming with ASTM Designation C443

502.1.4 Manhole Construction

502.1.4.1 Manhole Types and Requirements

502.1.4.1.1 Cast-In-Place Concrete Manholes

Add the following:

502.1.4.1.1.1

Forms

Manholes shall be constructed in place in accordance with the details shown in the plans and using forms as market by Improved Construction Methods, Inc., Jacksonville, Arkansas or Symons Corp., DePlaines, Illinois, or an approved equal.

502.1.4.1.1.2

Base

The base shall be cast monolithically with the rest of the manhole. The invert and flow channel shall be formed during or immediately after the placing of the concrete and trowel-finished as soon as the concrete has set sufficiently. The concrete must set for 24 hours before any pipe inside the manhole is trimmed. Concrete shall be minimum 4200 PSI.

The base concrete shall be 4200 PSI, maximum slump four (4) inches vibrated or tamped on undisturbed bearing. The base shall have a minimum diameter or width of at least one (1) foot greater than the outside diameter of the manhole, and a minimum thickness including the area under the pipe as follows:

0' to 12' manhole.....	12"
12' to 20' manhole.....	15"
20' and above.....	18"

502.1.4.1.1.3

Invert

All invert channels shall be smooth and accurately shaped to a semicircular bottom conforming to the inside of the adjacent sewer section. Inverts shall be formed directly in the concrete of the manhole base or may be constructed by laying full section sewer pipe through the manhole and breaking out the top half after

the base is constructed. Inverts shall extend up at least half of the diameter of the pipe. Changes in the direction of the sewer and entering branches shall have a true curve of as large a radius as the size of the manhole will permit. Where the pipe is laid through the manhole, the invert shall be finished to $\frac{1}{4}$ -inch below the center of the pipe. The pipe shall be trimmed down to $\frac{1}{4}$ -inch below the surface of the invert, and the edges of the pipe along the invert and at the walls of the manhole shall be plastered and brush-finished. Plaster shall be two (2) parts of masonry sand to one (1) part of Portland cement, or an approved non-shrink grout.

502.1.4.1.1.4

Manhole Barrel Section

The vertical forms, wall spaces, and placing cone must be carefully positioned and firmly clamped in place before any placement is made. The wall spacers must be located 90 degrees from each other. The manhole shall be cast of 4200 PSI concrete with a maximum slump of four (4) inches. The first placement shall consist of approximately $\frac{1}{2}$ yard of concrete evenly around the walls and vibrated until there is a minimum slump of 60 degrees from the bottom of the forms to the bearing surface both inside and outside of the manhole. When this is complete and before additional concrete is added, the concrete must be carefully vibrated on each side of each pipe. Additional concrete must be deposited in evenly distributed layers of about 18-inches with each layer vibrated to bond it to the preceding layer. The wall spacers must be raised as the placements are made with the area from which the spacer is withdrawn

being carefully vibrated. Excessive vibration is to be avoided. A maximum of two (2) percent calcium chloride may be added to the concrete, at the Contractor's option, to speed the set. The forms may be removed as soon as the concrete has sufficiently set (approximately two [2] hours after placement depending on field conditions).

Form marks and offsets up to one (1) inch will be permitted on the outside surface of the manhole. Form marks and offsets up to ½-inch will be permitted inside the manhole. All offsets on the inside surface of the manhole will be smoothed and plastered so there is no projection or irregularity capable of scratching a worker or catching and holding water or solid materials. Honeycomb will be plastered with a mortar consisting of three (3) parts of masonry sand and one (1) part Portland cement upon removal of the forms. Manholes deemed to be structurally unsound shall be replaced.

502.1.4.1.1.5

Backfilling

Will be performed evenly and carefully around the manhole 24-hours or more after the placement of concrete is completed and shall conform to these specifications.

502.1.4.1.1.6

Cold Joints

Should circumstances make a cold joint necessary, a formed groove or reinforcing dowels will be required in the top of the first placement for shear protection. Immediately before the second placement is made, the surface of the cold joint shall be thoroughly cleaned and wetted with a 1½-inch layer of mortar

(two [2] parts sand and one [1] part cement) being deposited on the surface. Cold joints below the natural water table or in the bottom four (4) feet of the manhole shall include an approved waterstop material. Waterstops shall be heavy duty polyvinyl conforming to Corps of Engineers Specification CRD572, latest edition, as manufactured by Serviced Products Division of W.R. Grace and Co.; B.F. Goodrich Company; Electrovert, Inc.; W.R. Meadows, Inc.; or approved equal.

502.3 Fire Hydrants

502.3.1 Materials

Delete all parts of Item 502.3.1 in its entirety except sub items 502.3.1.3, 502.3.1.4., 502.3.1.10, and 502.3.1.14.

Add the following:

All fire hydrants furnished shall conform strictly with the latest specification C-502 of the American Water Works Association Standards for dry barrel fire hydrants and must comply with the following supplementary details and changes or addition.

- a) Inlet Connection. Unless otherwise specified, the inlet connection shall be a six (6) inch standard mechanical joint complete with all joint accessories. The inlet shoe shall be cast of the same or stronger metal than the lower barrel to prevent impact damage of the shoe. The interior of the shoe, including the lower valve plate and/or cap nut shall have a protective epoxy coating of at least four (4) mils applied in the shop. If a cap nut is utilized it must be locked in place with a stainless-steel lock washer or similar non-corrosive device and all machined surfaces must be protected from water intrusion to prevent corrosion and assure ease of field teardown or maintenance.
- b) Main Valve. The main valve shall be reversible compression type, closing with the pressure and shall be not less than 5¼-inch in diameter. Composition of the main valve shall be molded rubber or neoprene having a durometer hardness of 90 + 5 and shall be not less than one (1) inch thick to protect against hydrant chatter and give long term durability.
- c) Outlet Nozzles. All hydrants shall be “three way”, equipped with two hose nozzles and one pumper nozzle.

- d) Diameter Outlet Nozzles. The hydrant shall have two hose nozzles, 2½-inches nominal I.D., and one pumper nozzle 4½-inches nominal I.D. with Natural Standard Hose Threads.
- e) Nozzle Attachment. All nozzles shall be mechanically connected into the barrel and have “O” Ring pressure seals to provide a positive seal between nozzles and hydrant barrel. A suitable nozzle lock shall be provided and shall be stainless-steel or bronze. Nozzles shall not be caulked in. Nozzle caps shall be furnished with pentagon nut the same size as the operating nut. They shall be furnished with interior rubber gaskets that will seat against bronze nozzles. All caps shall be secured to hydrant barrel by heavy duty non-kinking chains with a chain loop on each cap that permits free turning of the cap, for speed and ease of removal by fire fighters.
- f) Operating Nut. The operating nut shall be non-rising, pentagonal shape, measuring 1¼-inch at the top and 1½-inch at the base from point to flat. Pentagon shall have a depth of at least 1¼-inch. The hydrant shall be constructed in such a manner that the operating nut, “O” Rings and washers can be removed and replaced without removing the bonnet. All bearing surfaces of the operating nut shall be bronze.
- g) Holddown Nut. Holddown nut must have integral weather seal. Resilient seal between holddown nut and operating nut shall prevent debris entry to protect operating nut from damage.
- h) Lubrication Reservoir. The hydrant shall have a completely “O” Ring sealed oil reservoir with a minimum of two (2) “O” Ring pressure seals to prevent contamination of the oil around the operating parts of the hydrant. The oil reservoir shall be cast in such a manner that all operating parts shall be repairable without removal of the bonnet to facilitate repairs and shall be of a design that all bearing surfaces and threaded parts will be automatically lubricated upon each operation of the hydrant. If bearing surfaces are not lubricated, the design shall keep operating friction to a minimum. A high wear resistant thermoset plastic anti-friction washer shall be in place above the thrust collar to minimize operation torque and facilitate long term ease of operation. The operating threads must be sealed against contact with water at all times regardless of open or closed position of main valve. The hydrant shall have the capability of field personnel to visually check oil level and add additional oil if needed. Filler and inspection plug shall be recessed or flush type.
- i) Traffic Feature. Hydrants shall be “traffic model” having upper and lower barrel joined approximately two (2) inches above the ground line by a breakable “swivel” flange providing 360-degree rotation of the upper barrel for nozzle positioning and must be capable of rotating barrel with line pressure on. The ground line shall not be less than 18-inches below the centerline of the lowest nozzle and shall be clearly marked in a permanent manner on the lower barrel. A breakable stainless-steel stem coupling shall join the two-piece stem adjacent to the ground line flange. Screws, clevis pins, fasteners or bolts used in the coupling shall be Series 300 stainless-steel. The weakened portion

of the stem coupling shall be located to divert pressure from the stem coupling directly to the upper and lower stems when torque is applied in seat ring removal. Design of the coupling shall be such that when the coupling is broken, no part of the coupling will shatter or come loose and fall into hydrant and the break will not occur through the pins or bolts holding the coupling to the stem.

- j) Drain Valve Assembly. Hydrants shall be equipped with two drain valves which drain the barrel when the hydrant is closed and seal shut when the hydrant is in the open position. The upper valve plate, seat ring and drain ring (shoe bushing) must be bronze and work in conjunction to form an all bronze drain way. Upper valve plate if not bronze, must be epoxy coated. The bronze seat ring shall be a minimum 5¼-inch inside diameter and shall thread into a bronze drain ring forming an all bronze drain way with two (2) drain outlets for double protection against drain clogging and corrosive damage. All bronze components shall have less than 16 percent zinc alloy, Grade A to give high corrosion resistance as recommended in Section 2.1, Table I of American Water Works Association Standard C-502. Seat ring seals shall be "O" Rings. Hydrant shall be designed so that during opening and closing operation(s), water pressure force flushes the drain valve and drain openings to prevent clogging, thus allowing barrel drainage.
- k) Repair. All internal operating parts shall be removable from above ground level with a lightweight stem wrench.
- l) Provisions for Extension. All hydrants shall be capable of being extended to accommodate future grade changes without excavation. Extension of the hydrant shall be made by adding at the groundline flange a new coupling and stem section equal to the length of the extension. This must facilitate easy field grade adjustment. Stem extensions made by adding new section of stem to the threaded section of the stem at the top of the hydrant will not be accepted. Extension kits must be available from manufacturer in six (6) inch increments.
- m) Pressure Loss and Working Pressure. Pressure loss through one (1), 4½-inch nozzle at 1,000 GPM shall not be more than five (5) PSI.
- n) Nuts and Bolts. Body Bolts, studs and nuts shall be 316 stainless-steel.

Add the following:

502.3.4 Paint and Protective Coatings

All fire hydrants furnished under these specifications shall have paint and protective coatings applied at the factory or in the field as specified herein.

a) Factory Coating.

All hydrants shall be cleaned at the factory by shot blasting and shall be painted above the groundline (at the factory) with two (2) coats of neutral orange rust-prohibitive primer which shall be compatible with the finished coating.

All continuously wetted ferrous metal surfaces in the hydrant shoe shall be protected with a two-part thermoset epoxy coating to a nominal thickness of four (4) mils of corrosion protection and shall be of a color that is easily identified as an epoxy coating. All other exposed exterior surfaces below ground level shall be coated with asphalt varnish as specified in American Water Works Association Standard C-502, Section 4.2 or as otherwise outlined in these specifications. All remaining interior surfaces above the main valve, except machined surfaces such as the threaded portion of the operating stem or nut, shall be coated with asphalt varnish.

The thermoset epoxy coating shall be a two (2) part epoxy and shall function as a physical, chemical and electrical barrier between the base metal to which it is applied and the surroundings. The coating shall be nontoxic and shall not impart taste to water. The coating must be formulated from materials deemed acceptable per the Food & Drug Administration Document Title 21 of the Federal Regulations of Food Additives, Section 121.2514 entitled Resins & Polymeric Coatings. The coating shall have a satin finish and shall be suitable for field overcoating and touch-up with the same coating material without sanding or special surface preparation, or application of heat in excess of room temperatures.

b) Field Coatings.

All hydrants shall be field painted at the time the Contractor is instructed by the Public Works Inspector and shall be painted above ground with two (2) coats of aluminum paint, Mobil 11-A-19 or Tnemec 2-color, Tnemec-Gloss or approved equal according to the following color schedule:

Water Main Size	Bonnet and Caps Color
6"	Silver
8"	Blue
10" & Larger	Yellow

Add the following:

502.3.5 Experience and Certification

Fire hydrants, furnished under these specifications, shall be manufactured by a firm that has been producing hydrants of this general type continuously for the past five (5) years. Each company or manufacturer supplying hydrants under these specifications shall have on file, at the City of Rockwall, approved records of experience and detailed drawings of the proposed hydrants. Drawings shall cover the specific hydrant to be furnished for installation in the City and shall show all dimensions including metal thickness, construction details and materials used in all parts of the hydrant together with ASTM Designation and structural properties of these materials.

For ease of identification, all hydrants shall have "City of Rockwall, Texas" stenciled on the lower barrel. This stencil shall be applied at the factory. The manufacturer shall furnish to the City of Rockwall, a Certification that

For ease of identification, all hydrants shall have "City of Rockwall, Texas" stenciled on the lower barrel. This stencil shall be applied at the factory. The manufacturer shall furnish to the City of Rockwall, a Certification that the fire hydrant complies with the specifications without any exceptions. This certification shall apply to specific hydrants being installed within the City water distribution system. The certification shall state [1] the number of hydrants covered by the certification, [2] the Addition where hydrants are being installed or the Project Name and [3] name of Contractor installing hydrants.

The City may require the Manufacturer, Supplier or Contractor to dismantle hydrants at any time to determine compliance with these specifications. Location of any hydrant within the City system, installed after adoption of these specifications, that does not meet the specifications completely shall be cause for prohibiting the future use of any hydrants from the same manufacturer.

502.5 Fittings

502.5.1 Brass Stops, Cocks and Fittings for Water Works Service

Add the following:

502.5.1.2 Physicals

All pressure holding components of brass stops or fittings shall be certifiably pressure tested before assembly as specified herein, including meter coupling tailpieces, flared nuts, compression nuts, etc.

502.5.1.3 Design Features of Stop and Cocks

The stem end of the key, prestaked key nut and the "D" washer shall be so designed that they turn in unison and if tightened to the failure point, the stem will not break causing the key to blow out.

Corporation, curb and angle stop bodies shall be of one (1) piece construction to provide optimum resistance to installation, operating and earth-load stresses. The operating head and checks of these stops shall be integrally cast with the plug or cap of the stop for maximum resistance to torque feature.

Angle valves shall have a lockwing and shall be "O" ring sealed at the top of the key to prevent leakage during operation and to act as a secondary protection against external top leakage. Meter swivel nuts shall be of the saddle nut construction to support the meter during installation. Inlet flare and compression parts for angle valves shall be field interchangeable on ¾-inch and one (1) inch sizes to make repairs easier and more economical.

502.5.1.4 Design Features of Fittings

Add the following to the third paragraph of this item:

Flare joints shall have curved metal to metal seating surfaces and flare nuts shall meet the following overall minimum length to insure that the flare nut will give adequate pipe support to this type of joint.

<u>Flare Nut - Minimum</u>	<u>Overall Length</u>
3/4"	1-1/2"
1"	2"
1-1/2"	3"
2"	3-1/2"

Add the following to the sixth paragraph of this item:

All stops and fitting joints shall be of the compression type for copper pipe unless otherwise noted. Compression coupling nuts shall be designed to "bottom out" on a machined shoulder on the fitting to provide a visual check for proper assembly and eliminate field judgment errors of the installation. The coupling nut shall house the compression gasket in a smooth machined area and shall be internally coated with a fluorocarbon (Teflon) lubricant to prevent gasket damage and reduce installation torques. The compression gasket shall be a heavy armored gasket to provide electrical continuity through the fitting and prevent gasket cold flow and shall house a concave hardened stainless-steel overlapping gripper band that is automatically activated and set by shouldering out the fitting properly.

Minimum pullout (or tensile strength) required of these fittings after installation to protect against earthloads are as follows:

3/4 "	2,000 lbs.
1"	3,000 lbs.
1-1/2"	3,500 lbs.
2"	4,000 lbs.

All outlet threads on compression connections shall be compatible with the City's present drilling and tapping machine equipment.

502.6 Valves

502.6.1 Metal-Seated Gate Valves for Ordinary Water Works Service

502.6.1.2 Bonnet Bolting

Delete in its entirety and replace with the following:

Body Bolts, studs and nuts shall be 316 stainless-steel.

502.6.2 Resilient-Seated Gate Valves for Ordinary Water Works Service

502.6.2.1 General Description

Add the following:

Unless otherwise approved in writing, all Gate Valves for direct buried service in the City's distribution system, six (6) inches through 12-inches in diameter, shall be Resilient Seated Gate Valves that conform strictly with the latest specification C-509 of the American Water Works Association Standards and must comply with the following supplementary details, changes or additions. Gate valves shall be iron body designed for a working pressure of 250 PSI. All valves shall be hydrostatically tested at 200 PSI and shell tested at 500 PSI. Any leakage during testing shall be cause for rejection. For ease of repair the body, bonnet and stuffing box shall be flanged together with ASTM Grade B bolts and nuts. Each valve shall have the maker's initials, pressure rating, and year in which manufactured cast in the body.

502.6.2.2 Bonnet Bolting

Delete in its entirety and replace with the following:

Body Bolts, studs and nuts shall be 316 stainless-steel.

502.6.2.5 Valve Stem and Nuts

Add the following:

Stems shall be machined from manganese bronze rod with an integral forged thrust collar machined to size. The stems shall be non-rising and equipped for nut operation, which shall be opened by turning to the left. The seals shall consist of two "O" rings above and one "O" ring below the thrust collar. An anti-friction washer shall be located above and below the thrust collar for operating torque. The stem nut shall be ASTM B-62 bronze.

502.6.2.17 Resilient Wedge

Add the following:

The wedge shall be cast iron, fully encapsulated in molded rubber complying with ASTM D2000. Wedge must have molded wedge guides preventing the disc from tilting downstream during operation. Protective guide cap bearings made of polymer bearing material to provide a bearing interface between the wedge guide and valve interior.

502.6.2.18 Paint and Protective Coatings:

Add the following:

All valves furnished under these specifications shall be painted on the exterior as specified in AWWA C-509 with asphalt varnish.

All ferrous metal surfaces in the internal part of the valve shall be protected with a fusion epoxy coating to a nominal thickness of ten (10) mils for corrosion protection and shall be of a color that is easily identified as an epoxy coating.

The proguard fusion epoxy coating shall fully comply with AWWA C550 and certified NSF 61. The coating shall be non-toxic and shall not impart taste to water. The coating must be formulated from materials deemed acceptable per the Food & Drug Administration Document Title 21 of the Federal Regulations of Food Additives, Section 121.2514 entitled Resins and Polymeric Coatings. The coating shall have a satin finish and shall be suitable for field overcoating and touchup with the same coating material without sanding or special surface preparation, or application of heat in excess of room temperature.

502.6.2.19 Experience and Certification

Add the following:

Valves, furnished under these specifications, shall be manufactured by a firm that has been producing valves of this general type continuously for the past five (5) years. Each company or manufacturer supplying valves under these specifications shall have on file, with the City of Rockwall, approved records of experience and detailed drawings of the proposed valves. Drawings shall cover the specific valve to be furnished for installation and shall show all dimensions including metal thickness, construction details and materials used in all parts of the valve together with ASTM Designation and Structural properties of these materials.

The manufacturer shall furnish to the City of Rockwall, a Certification that the valve complies with the specifications without any exceptions. This certification shall apply to specific valves being installed within the City water distribution system. The certification shall state [1] the number of valves covered by the certifications, [2] the Addition where valves are being installed or the Project Name, and [3] name of Contractor installing valves.

The City may require the Manufacturer, Supplier or Contractor to dismantle valves at any time to determine compliance with these specifications. Location of any valve within the City system, installed after adoption of these specifications, that does not meet the specifications completely shall be cause for prohibiting the future use of any valves from the same manufacturer.

502.6.2.20 Tapping Sleeves:

Add the following:

The materials for tapping sleeve bodies shall be, by City approval only, cast-iron or ductile-iron in accordance with AWWA Standard C110 (ANSI 21.10), in two sections, or halves to be bolted together with high-strength, corrosion resistant, low alloy steel bolts conforming to AWWA Standard C111 (ANSI 21.11).

Cast iron and ductile-iron sleeve shall be mechanical joint, or as specified, or dimensions to secure proper fit on the type and class of pipe on which they are to be used. Each sleeve shall be furnished with a $\frac{3}{8}$ -inch test opening so that tests can be made prior to tapping. Opening shall be provided with a $\frac{3}{8}$ -inch bronze plug.

502.6.5 Butterfly Valves

Add the following:

All Butterfly Valves for installation underground in the City's distribution system 16 inches through 48 inches shall be in accordance with this specification.

All butterfly valves furnished shall conform strictly with the latest specification C-504 of the American Water Works Association Standard for rubber-seated butterfly valves and must comply with the following supplementary details and changes or addition.

a) Body. The body shall be cast-iron ASTM A126, Class B and shall have face to face dimensions in accordance with AWWA Standards for short body, Class 150-B. All butterfly valves shall have a floating body seat ring to compensate for change in direction of flow to assure bottle-tight seal in either direction.

b) Shaft. Valve shafts shall be an 18-8, Type 316 stainless-steel. Valve disc and shaft shall be standard self-adjusting Chevron "V" type packing. Shaft seals shall be of a design allowing replacement without removing the valve shaft.

c) Disc and Seat. The valve disc shall be cast iron ASTM A126, Class B. The valve seat shall be Buna-N located on the valve body. Valves 20-inch and smaller shall have a bonded seat that meets test procedures in ASTM

D429, Method B. Valves 24-inch and larger shall be retained in the valve body by mechanical means without the use of metal retainers or other devices located in the flow stream.

d) Operator. Butterfly valve operators shall be of the traveling nut design. All operators shall have adjustable mechanical stop limiting devices to prevent over travel of the disc. The operator shall have a mechanical stop which will withstand an input torque of 450-foot/LBS. against the stop. The traveling nut shall engage alignment grooves in the housing.

e) Operation. Unless otherwise shown in the plans, all valves shall open counter clockwise.

f) Valve Ends. Valve ends shall be Mechanical Joint End, or Flanged Ends. Mechanical joint valves shall come complete with bolts, nuts, gaskets and glands. It shall be the responsibility of the Contractor to coordinate the ends of the adjoining pipe with the type valve end he/she proposes to use.

g) Testing. All valves seats shall be tested at 150 PSI as described in AWWA C-504 and in addition shall have a shell test of 300 PSI. Any leakage shall be cause for rejection.

h) Paint and Protective Coatings. All butterfly valves furnished under these specifications shall be painted on exterior as specified in AWWA C-504, with asphalt varnish.

All ferrous metal surfaces in the internal part of the valve shall be protected with a two-part thermoset epoxy coating to a nominal thickness of 4 mils for corrosion protection and shall be of a color that is easily identified as an epoxy coating. This shall be applied in shop.

The thermoset epoxy coating shall be a two-part epoxy and shall function as a physical, chemical and electrical barrier between the base metal to which it is applied and the surroundings. The coating shall be non-toxic and shall not impart taste to water. The coating must be formulated from materials deemed acceptable per the *Food & Drug Administration Document Title 21 of the Federal Regulations of Food Additives, Section 121.2514 entitled Resins & Polymeric Coatings*. The coating shall have a satin finish and shall be suitable for field overcoating and touchup with the same coating material without sanding or special surface preparation, or application of heat in excess of room temperatures.

i) Experience and Certification. Butterfly valves, furnished under these specifications, shall be manufactured by a firm that has been producing valves of this general type continuously for the past five (5) years. Each company or manufacturer supplying valves under these specifications shall have on file, at the City of Rockwall, approved records of experience and detailed drawings of the proposed valves. Drawings shall cover the specific valve to be furnished for installation in the City of Rockwall and shall show all dimensions including metal thickness, construction details

and materials used in all parts of the valve together with ASTM Designation and structural properties of these materials.

The manufacturer shall furnish to the City, a Certification that the valve complies with the specifications without any exceptions. This certification shall apply to specific valve being installed with the City water distribution system. The certification shall state [1] the number of valves covered by the certification, [2] the Addition where valves are being installed or the Project Name and [3] name of Contractor installing valves.

The City may require the Manufacturer, Supplier or Contractor to dismantle valves at any time to determine compliance with these specifications. Location of any valve with the City system, installed after adoption of these specifications, that does not meet the specifications completely shall be cause for prohibiting the future use of any valves from the same manufacturer.

ITEM 504. OPEN CUT – BACKFILL

504.2 Materials

504.2.2 Pipe Bedding Material for Storm, Water and Sanitary Sewer Mains

Add the following:

Unless otherwise indicated, storm sewer pipe shall be bedded with Class “C” bedding in accordance with the details shown on the plans.

504.2.2.1 Crushed Stone Embedment

Add the following:

Where stone is called out for pipe embedment, Standard Crushed Rock-Aggregate, Grade 4, shall be used unless otherwise approved in writing.

504.3 Excavation and Foundation

Add the Following:

504.3.1 Excavation

Add the following:

Prior to start of excavation the Contractor shall remove and stockpile the Topsoil and protect the Topsoil from contamination during construction.

504.5 Embedment

Add the following:

Rock Cuttings will not be permitted in the pipe bedding for sanitary sewer or water lines in the City of Rockwall.

504.5.2 Embedment Classes

504.5.2.9 Class "C" Embedment

Replace the last sentence in its entirety with the following sentence:

Density shall be at least 95 percent of maximum density, as determined by ASTM D698.

504.5.2.15 Class "H" Embedment

Class "H" Embedment shall be used on the PVC Sanitary Sewer Pipe installed within the City of Rockwall.

On PVC Pipe 18 inches through 27 inches in diameter the crushed stone shall be brought up in uniform layers to a point nine inches over the top of the pipe when compacted.

504.6 Final Backfill

Add the following:

After the trench has been refilled, topsoil shall be replaced to the extent that rock, excavated from the trench, will be completely covered and the area is returned to its original condition, except that in cultivated areas a minimum of 12-inches of top soil shall be replaced.

504.6.1 Excavated Material

Add the following:

The material used in the backfill shall be pulverized to the extent necessary to produce a free-flowing material free of clay balls larger than 6-inch diameter.

506. OPEN CUT - WATER CONDUIT INSTALLATION

506.3 Laying Water Conduit

Add the following:

Valves for installation in the City's distribution system shall be installed by direct burial as shown on the standard detail sheets and shall be provided with valve boxes for operation of the valve.

506.5 Hydrostatic Test

Delete first paragraph and table and replace with:

All hydrostatic tests shall be maintained over a period of not less than four hours.

"Before being accepted, all ductile iron, C-900 PVC or concrete cylinder water mains shall be tested with a hydraulic test pressure of not less than four hours. Concrete pressure pipe shall be tested with a hydraulic test pressure of 120 percent of the design pressure. Steel pressure pipe shall be tested with a hydraulic test pressure not to exceed 150 percent and not less than 120 percent of the designed working pressure. The rate of leakage of all pipe tested shall not exceed the amounts shown in the tables titled "Hydrostatic Test-C-900 PVC, Steel or Ductile Iron Water Mains" or "Hydrostatic Test-Concrete Cylinder Water Mains". Water lines of material in combination shall be tested for the type of pipe (material) with the least stringent hydraulic test pressure and maintained over a period of not less than four hours."

HYDROSTATIC TEST
C900-16 PVC, STEEL OR DUCTILE-IRON WATER MAINS

L.F. PIPE	GALLONS ALLOWED								
	Pipe Diameter								
	4"	6"	8"	10"	12"	14"	16"	18"	20"
5	0.016	0.024	0.032	0.039	0.047	0.055	0.063	0.071	0.079
10	0.032	0.047	0.063	0.079	0.095	0.110	0.126	0.142	0.158
20	0.063	0.095	0.126	0.158	0.189	0.221	0.253	0.284	0.316
30	0.095	0.142	0.189	0.237	0.284	0.331	0.379	0.426	0.473
40	0.126	0.189	0.253	0.316	0.379	0.442	0.505	0.568	0.631
50	0.158	0.239	0.316	0.395	0.473	0.552	0.631	0.710	0.789
60	0.189	0.284	0.379	0.473	0.568	0.663	0.758	0.852	0.947
70	0.221	0.331	0.442	0.552	0.663	0.773	0.884	0.994	1.105
80	0.253	0.379	0.505	0.631	0.756	0.884	1.010	1.136	1.263
90	0.284	0.426	0.568	0.710	0.852	0.994	1.136	1.278	1.420
100	0.316	0.473	0.631	0.789	0.947	1.105	1.263	1.420	1.578
200	0.631	0.947	1.263	1.578	1.894	2.210	2.525	2.841	3.157
300	0.947	1.420	1.894	2.367	2.841	3.314	3.788	4.261	4.735
400	1.263	1.894	2.525	3.157	3.788	4.419	5.051	5.682	6.313
500	1.578	2.367	3.157	3.946	4.735	5.524	6.313	7.102	7.891
600	1.894	2.841	3.788	4.735	5.682	6.629	7.576	8.523	9.470
700	2.210	3.314	4.419	5.524	6.629	7.734	8.838	9.943	11.048
800	2.525	3.788	5.051	6.313	7.576	8.838	10.101	11.364	12.626
900	2.841	4.261	5.682	7.102	8.523	9.943	11.364	12.784	14.205
1000	3.157	4.735	6.313	7.891	9.470	11.048	12.626	14.205	15.783

Maximum allowable water loss in 4 hours at 180 pounds per square inch of pressure for a rate of 25 gallons per inch diameter of pipe per mile over a 24-hour period

EQUATION THE ABOVE CHART IS BASED ON:

$$\text{Maximum Loss Gal} \quad \text{Diameter of Pipe inches} \quad \frac{L \text{ F of Pipe}}{\text{Pipe}} \quad \text{---}$$

**HYDROSTATIC TEST
CONCRETE CYLINDER WATER MAINS**

L.F. PIPE	GALLONS ALLOWED								
	Pipe Diameter								
	4"	6"	8"	10"	12"	14"	16"	18"	20"
5	0.031	0.047	0.063	0.078	0.095	0.110	0.126	0.142	0.158
10	0.063	0.095	0.126	0.158	0.189	0.221	0.253	0.284	0.315
20	0.126	0.189	0.253	0.316	0.379	0.442	0.505	0.568	0.631
30	0.188	0.284	0.379	0.473	0.568	0.663	0.758	0.852	0.947
40	0.253	0.379	0.505	0.631	0.758	0.884	1.010	1.136	1.263
50	0.316	0.473	0.631	0.789	0.947	1.105	1.263	1.420	1.578
60	0.379	0.568	0.758	0.947	1.136	1.326	1.515	1.704	1.894
70	0.442	0.663	0.884	1.105	1.326	1.547	1.768	1.989	2.210
80	0.505	0.758	1.010	1.263	1.515	1.768	2.020	2.273	2.525
90	0.568	0.852	1.136	1.420	1.704	1.989	2.273	2.557	2.841
100	0.631	0.947	1.263	1.578	1.894	2.209	2.525	2.841	3.156
200	1.263	1.894	2.525	3.156	3.788	4.419	5.050	5.682	6.313
300	1.894	2.841	3.788	4.735	5.682	6.628	7.575	8.522	9.470
400	2.525	3.788	5.050	6.313	7.575	8.838	10.100	11.363	12.626
500	3.158	4.735	6.313	7.891	9.470	11.047	12.626	14.204	15.782
600	3.788	5.682	7.575	9.469	11.363	13.257	15.151	17.045	18.938
700	4.419	6.628	8.838	11.047	13.257	15.468	17.676	19.885	22.095
800	5.050	7.575	10.100	12.626	15.152	17.676	20.201	22.726	25.251
900	5.682	8.522	11.363	14.204	17.044	19.886	22.726	25.567	28.405
1000	6.313	9.469	12.626	15.782	18.939	22.096	25.253	28.408	31.564

Maximum allowable water loss in 4 hours at 180 pounds per square inch of pressure for a rate of 50 gallons per inch diameter of pipe per mile over a 24-hour period

EQUATION THE ABOVE CHART IS BASED ON:

$$\text{Maximum Loss Gal} \quad \text{Diameter of Pipe inches} \quad \frac{L \text{ F of Pipe}}{\text{Pipe}} \quad \text{---}$$

507 OPEN CUT – WASTEWATER CONDUIT INSTALLATION

507.5 Tests and Inspections

507.5.2 Television Inspection

Add the following to this section:

All sanitary sewer pipe construction in this contract shall be visually inspected by photographic means (television and video taped) prior to final acceptance by the Owner. No separate measurement or payment shall be provided for the video inspection. All labor, materials and equipment required are subsidiary to the appropriate bid items as established in the *Proposal and Bid Schedule*.

ITEM 508 OPEN CUT – STORM WATER CONDUIT INSTALLATION

Add the following:

508.8 Inspection

All storm sewers shall be visually inspected by photographic means (television and video taped), at Contractor's expense, prior to final acceptance by the City. Any sags, open joints, cracked pipes, etc. shall be repaired or removed by the Contractor at Contractor's expense. Pipes will be cleaned prior to televising the pipe. The contractor shall furnish a DVD formatted video to the City.

ITEM 509 CROSSINGS

509.5 Creek and River Crossings

Add the following:

509.5.1 Aerial Crossings

509.5.1.1 General

Piers for aerial crossings will be drilled piers and columns of the diameter shown on the plans. Piers shall be founded at least six (6) feet into firm gray limestone and eight (8) feet into undisturbed material, unless otherwise directed by the Owner.

Materials and workmanship required to construct piers and cap shall conform to Reinforced Concrete Structures, of the specifications. Concrete of piers shall be 4,200 PSI.

Anchor straps and bolts shall be installed as shown on the plans, and shall be hot dipped galvanized after fabrication.

After installing the aerial crossing, including the junction collars with the main sewer pipe, an approved coal tar mastic jointing compound shall be installed the full inside

circumference of the pipe at each joint to produce a smooth surface with no sharp flow transitions.

509.5.1.2 Steel Pipe

Steel pipe used of Aerial Crossings shall be of the diameter and wall thickness shown on the plans and shall be line pipe manufactured in accordance with the following specifications:

- 1) AWWA C200-75 Mill Type Steel Water Pipe, Grade B
- 2) ASTM A139, Grade B

Pipe shall be designed for a clear span as shown on the plans. Couplings shall be Dresser Type 38, or approved equal and shall be located as shown on the plans. Bolts shall be stainless-steel or galvanized.

The steel pipe sizes shown on the plans are the nominal diameters of the minimum size steel pipe which may be furnished and installed. Pipe of a larger size may be furnished at the Contractor's option, but no extra payment will be allowed. If larger pipe is utilized, it shall be set so as to retain the flow lines designated on the plans.

All steel pipe shall receive an interior shop-applied Liquid Epoxy Coating System in conformance with AWWA C-210, latest revision.

509.5.1.3 Exterior Painting

Exterior painting for aerial crossings shall conform to Item 804.2.

All surface prepared in the field shall be inspected by the City of Rockwall for adequate surface preparation as defined above prior to application of paint coating. All surfaces to be painted in the field shall have their readiness for painting approved by the City of Rockwall before work is started.

Paint shall be applied to all ferrous material part of the aerial crossing including but not limited to pipe, couplings, straps, nuts, bolts, etc.

509.5.1.3.1 Paints

Paints for aerial crossings shall be:

- 1) TNEMEC Series 66, or Mobile 78 Series, or Koppers 200 HB, 5.0 mil dry film thickness each coat.

- 2) TNEMEC Series 66, or Mobile 78 Series, or Koppers 200 HB, 6.0 mil dry film thickness each coat.

Approved material of other manufacturers which are equivalent in all respects to the brands named above, may be substituted upon approval. All paint applied must be by the same manufacturer. The color on the final coat shall be selected by the City of Rockwall.

509.5.1.4 Measurement of Payment

Aerial crossings will be measured for payment per each between the limits shown on the plans and will be paid for at the lump sum bid price for each crossing in the Bid Schedule.

Concrete piers and collars to the elevations shown in the plans will be measured and paid for in the lump sum price for aerial crossings. Payment in vertical feet for additional depth of reinforced concrete piers as approved by the City of Rockwall, shall be as provided in the Proposal and Bid Schedule.

Payment of the unit or lump sum prices shall be full compensation for furnishing all labor, supervisions, materials, tools, equipment, and incidentals, and for performing all work necessary in construction the aerial crossings and piers, including excavation, dewatering, backfilling, disposal of surplus material, painting, testing, concrete encasement, hauling, transportation costs, disposal costs, salvaging, and any other work required in accordance with the Plans and Specifications.

Division 600 Conduit & Appurtenance Rehabilitation

NOTE: The **(1)** symbol specifies that this item is also covered in the City of Rockwall's "Special Provisions" to the "Standard Specifications for Public Works Construction, North Central Texas". These Special Provisions are additional and modify the "Standard Specification"

Table 7.6: Revisions to NCTCOG's Division 600 Conduit & Appurtenance Rehabilitation

<u>Revised</u>	<u>Standard Specification Item No.</u>	<u>Description</u>
	601	PIPELINE REHABILITATION
	601.1	Description
	601.2	General
	601.3	General Materials
	601.4	General Methods
	601.5	Section Held for Future Use
	601.6	Section Held for Future Use
	601.7	Cured-In-Place Pipe Liner (CIPP Liner)
	601.8	Pipe Bursting With Polyethylene
	601.9	Pipe Bursting With Rigid Place
	601.10	Polyvinyl Chloride (PVC) Profile Gravity Liner Pipe (Segmental Sliplining)
	601.11	Measurement and Payment
	602	REHABILITATION OF MANHOLES OR UNDERGROUND VAULTS
	602.1	General
	602.2	Submittals
	602.3	Quality Assurance
	602.4	Delivery, Storage and Handling
	602.5	Rehabilitation
	602.7	Inspection and Testing
	602.8	Measurement and Payment
	603	ABATEMENT OF COATINGS CONTAINING HEAVY METALS
	603.1	General
	603.2	Job Plan
	603.3	Testing
	603.4	Monitoring
	603.5	Protection
	603.6	Lead-Based Coating Removal
	603.7	Lead-Based Coating Encapsulation
	603.8	Clean-Up and Disposal
	603.9	Payment
	604	REMOVAL OF ASBESTOS-CEMENT PIPE (ACP)

	604.1	General
	604.2	Job Plan
	604.3	Procedures
	604.4	Disposal
	604.5	Payment

Division 700 Structures

NOTE: The **(1)** symbol specifies that this item is also covered in the City of Rockwall's "Special Provisions" to the "Standard Specifications for Public Works Construction, North Central Texas". These Special Provisions are additional and modify the "Standard Specification"

Table 7.7: Revisions to NCTCOG's Division 700 Structures

<u>Revised</u>	<u>Standard Specification Item No.</u>	<u>Description</u>
	701	GENERAL STRUCTURES
	701.1	Structural Wood Products
	701.2	Structural Excavation
	701.3	Structural Bolting
	702	CONCRETE STRUCTURES
	702.1	Description
	702.2	Concrete Structure Materials
(1)	702.3	Mix Design and Mixing Concrete for Structures
	702.4	Mix Design and Mixing Lightweight Concrete for Structures
	702.5	Constructing Concrete Structures
	702.6	Pre-stressed Concrete for Structures
	702.7	Pneumatically Placed Concrete (Gunite)
	702.8	Drilled Shaft Foundations
	702.9	Pre-cast and Cast-In-Place Concrete Units
	703	STEEL STRUCTURES
	703.1	Description
	703.2	Materials for Steel Structures
	703.3	Steel Structure Construction
	703.4	Painting Metal Structures
	703.5	Measurement and Payment
	704	PILING
	704.1	Piling Materials
	704.2	Driving Piling
	704.3	Penetration
	704.4	Bearing Resistance
	704.5	Constructing Cast-In-Place, Pre-stressed Concrete Piling
	704.6	Measurement and Payment

ITEM 702 CONCRETE STRUCTURES

702.3 Mix Design and Mixing Concrete for Structures

702.3.4 Quality of Concrete

702.3.4.2 Standard Classes

Add the following:

Type "G" Concrete: Min.- Sacks Cement per C.Y. – 7.0; min. 28-day Comp. Strength - 5,000 PSI; Min. seven (7) day Strength 3600 PSI; Max. Water Cement Ratio - 5.0; Course Aggregate 1½-inch. No fly ash allowed.

Division 800 Miscellaneous Construction & Materials

NOTE: The **(1)** symbol specifies that this item is also covered in the City of Rockwall's "Special Provisions" to the "Standard Specifications for Public Works Construction, North Central Texas". These Special Provisions are additional and modify the "Standard Specification"

Table 7.8: Revisions to NCTCOG's Division 800 Miscellaneous Construction & Materials

<u>Revised</u>	<u>Standard Specification Item No.</u>	<u>Description</u>
	801	BARRIERS, WARNING & DEOUR SIGNS AND FENCES
	801.1	Barriers and Warning and Detour Signs
(1)	801.2	Metal Beam Guard Fence
	801.3	Railing
	801.4	Chain Link Fence
(1)	801.5	Wire Fence
	802	STEPS AND RETAINING WALLS
	802.1	Concrete Steps
	802.2	Concrete Retaining Walls
	802.3	Segmental Retaining Wall Systems
	802.4	Cofferdams
	803	SLOPE AND CHANNEL PROTECTION
	803.1	Articulating Concrete Block
(1)	803.2	Gabion Structures
(1)	803.3	Riprap
	803.4	Geotextiles Used in Drainage and Stabilization Applications
	804	PAINTING AND OTHER PROTECTIVE TREATMENTS; PAVEMENT MARKING
	804.1	Description
(2)	804.2	Painting and Marking

	804.3	Galvanizing
	804.4	Measurement and Payment
	804.5	Specialty Coatings
	805	ELECTRICAL COMPONENTS AND CONDUIT
	805.1	Description
	805.2	General Requirements for Electrical Components
(1)	805.3	Conduit Construction Methods
(1)	805.4	Measurement and Payment
	806	METALS MATERIALS
	806.1	General
	806.2	Structural Steel
	806.3	Forgings
	806.4	Castings
	806.5	Copper
	806.6	Bolts, Nuts and Washers
	806.7	Measurement and Payment

801 BARRIERS, WARNING & DETOUR SIGNS, AND FENCES

801.1 Barriers and Warning And Detour Signs

Add the Following

Reflectorized marking for guard rail and other traffic control used shall meet the requirements of 3M Scotchlite Brand Reflective Sheeting Grade, Series 2800, 3800 or 5800, or equal. The marking shall conform to U.S. Department of Transportation, Federal Highway Administration, STANDARD SPECIFICATIONS FOR CONSTRUCTION OF ROADS AND BRIDGES ON FEDERAL HIGHWAY PROJECTS, 1979 FP-79, Type III A, Sections 633.36 and 718.01 and Federal Supply Service, General Services Administration, LS-300 C, SHEETING AND TAPE REFLECTIVE NON-EXPOSED LENS, Reflectivity 2, Class 4.

801.2 Metal Beam Guard Fence

Add the following:

Reflectorized Marking shall be applied to metal beam guardrail at locations shown on the plans. To apply properly, the following equipment and accessories are recommended:

a. Heat Activated Adhesive

- (1) Heat lamp vacuum applicator with temperature control.
- (2) Remove protective liner from adhesive and place glossy side of liner over the sign face. Sheeting and liner may require perforation to aid in air evaluation.

b. Pressure Sensitive Adhesive

- (1) 48-inch Interstate Squeeze Roll Applicator.
- (2) Hand application. To obtain maximum initial adhesion use firm pressure with two (2) inch (i.e. five [5] cm) rubber roller or plastic squeeze. Multiple, heavy overlapping strokes should be used. Re-squeeze all edges.

801.5 Wire Fencing

801.5.2 Material

Add the following:

801.5.2.1 Wire Fencing Fabric:

All chain link fencing shall be No. 9 gage copper bearing open-hearth steel wire.

801.5.2.2 Posts

801.5.2.2.1 Metal Posts

All posts shall be heavily galvanized by the hot-dip process after fabrication and shall be fitted with watertight malleable iron caps. All posts shall be of the following size and shape:

801.5.2.2.2 Line Posts

"H" Section hot rolled weighing not less than 4.10 pounds per linear foot or 3½-inch O.D. pipe weighing not less than 3.65 pounds per linear foot.

801.5.2.2.3 Terminal Posts

Three (3) inch steel pipe weighing not less than 5.79 pounds per linear foot.

801.5.2.2.4 Gate Posts

Four (4) inch O.D. steel pipe weighing not less than 9.11 pounds per linear foot.

801.5.2.3 Rails, Gates, Braces and Fittings

Shall be 1⅝-inch steel pipe weighing not less than 2.27 pounds per linear foot.

ITEM 803 SLOPE AND CHANNEL PROTECTION

803.2 Gabion Structures

803.2.2 Materials

803.2.2.1 Baskets

Add the sentence:

All wire used, including tie and connecting wire, shall be certified by Mill Test Reports showing compliance with specification requirements.

803.2.2.2 Stone

Add the following:

Facing stone shall be hand selected, large stone and shall be selected for best appearance. Facing stone shall be an off-white color and prior to laying the stone, samples shall be delivered to the site and shall be approved by the Engineer for gradation and appearance.

803.2.3 Gabion Construction

803.2.3.1 Geotextile Filter Layer

Add the following:

High strength permeable barrier fabric for use as a filter media, shall be placed along the earth side of the Gabion Structures. The permeable barrier fabric to be used shall be TREVIRA S1115 as manufactured by Hoechst Fibers Industries, Spartanburg, South Carolina; MIRAFI 140 Fabric, produced by Fiber Industries, Inc.; Bidim U-14 as distributed by Quline Corporation, Houston, Texas, or approved equal.

803.3 Riprap

803.3.2 Riprap Materials **803.3.2.2 Stone**

803.3.2.2.1 Types

Broken Concrete.

Delete this sub-section and replace with the following wording:

Broken concrete shall not be used for riprap.

ITEM 804 PAINTING AND OTHER PROTECTIVE TREATMENTS, PAVEMENT MARKINGS

804.2 Painting and Marking

804.2.3 Preparing Structures for Paint

804.2.3.1 Descaling, Cleaning and Preparation of Surfaces

Add the following:

Prior to painting concrete or masonry screening walls the concrete must be thoroughly cured and dry for proper adhesion of paint. Preparation of work shall include either of the following:

- (1) The concert surface shall be thoroughly washed with a solution of one (1) gallon Muriatic Acid to ten (10) gallons H₂O (Caution: Always add acid to H₂O rather than H₂O to acid). Rinse thoroughly with clear water and paint while damp.
- (2) Treatment of surface with masonry conditioner such as a clear alkali-resistant soya alkyd binder type sealer or as recommended by paint manufacturer.

804.2.5 Painting New Structures

804.2.5.5 Finish Coats

Add the following:

On masonry walls which are painted, the total dry film thickness shall be 6 mils (two [2] coats applied at eight [8] mils wet and spreading rate = 200 square feet per gallon based on 36% + 2% Volume Solids). The thickness shall be tested using a Wet Film Thickness Gage.

804.2.6 Cleaning and Painting Existing Structures

Add the following:

Masonry walls which require repainting shall be sand blasted or cleaned with a power brush, removing all mastic, powdery, thick layered, peeling or heavily chalked old paint. Spot prime all bare areas with Masonry Conditioner. If old paint is a cement-based paint, apply Masonry Conditioner to entire surface and apply two (2) coats of paint in accordance with 8.9.3(k) above.

ITEM 805 ELECTRICAL COMPONENTS AND CONDUIT

805.3 Material

Add the following:

In the City of Rockwall, conduit for street lighting shall be 2-inch PVC pipe and for traffic control shall be three (3) inch PVC pipe, meeting the requirements of Item 2.10, Electrical Components.

Add the following:

805.3.7 Pull Box.

All pull boxes shall be #36 supplied by Traffic Signal Equipment Company, Fort Worth, Texas or approved equal. Boxes shall be approximately 10 1/2"x17"x12" and shall be furnished with a concrete cover.

805.4 Conduit Construction Methods

Revise first sentence, third paragraph to read as follows:

All conduit shall be placed a minimum of 36-inches below finish grade. Conduit in median shall be placed a minimum of 36-inches below inside of curb as shown on plans.

OF ROCKWALL

ADDENDUM

TO

NORTH CENTRAL TEXAS

STANDARD SPECIFICATIONS

FOR

PUBLIC WORKS CONSTRUCTION

All work within the City of Rockwall shall conform to the standard drawings called out within this section. The City of Rockwall's Standard Drawing for Construction shall conform to Section II – Standard Drawings for North Central Texas Council of Governments Standard Specifications and Standard Drawings, November 2017, Fifth Edition.

The North Central Texas Standard Drawings shall be modified and clarified by the deletion, revision, and/or addition of the following drawings. Except when specifically stated, none of the standard drawings of the North Central Texas Standard Specifications shall be deleted.

Division 1000 Erosion and Sediment Control

- NOTE:**
- (1) Deleted NCTCOG Drawing
 - (2) Revised NCTGOG Drawing (see revisions below)
 - (3) Added Rockwall Standard Drawing (see drawing below)
 - (4) Added Current TxDOT Standards

Table 9.1: Revisions to NCTCOG's Division 1000 Erosion and Sediment Control

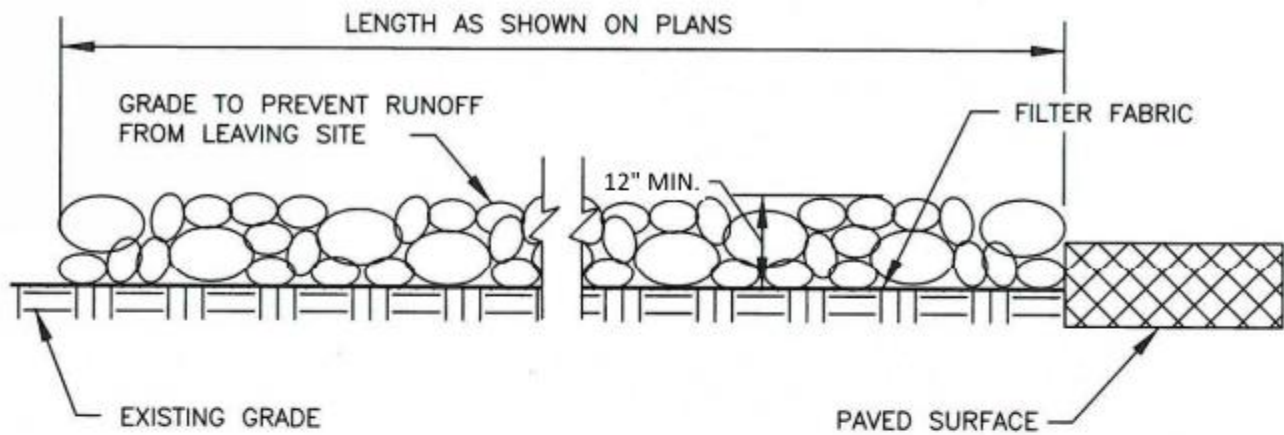
<u>Revised</u>	<u>Drawing No.</u>	<u>Subject</u>
(1)	1020A	Silt Fence
(3)	R-1020A	Silt Fence
(1)	1020B	Silt Fence — General Notes
(3)	R-1020B	Silt Fence – General Notes

<u>Revised</u>	<u>Drawing No.</u>	<u>Subject</u>
(1)	1070A	Stabilized Construction Entrance
(3)	R-1070A	Stabilized Construction Entrance
(1)	1070B	Stabilized Construction Entrance
(3)	R-1070B	Stabilized Construction Entrance

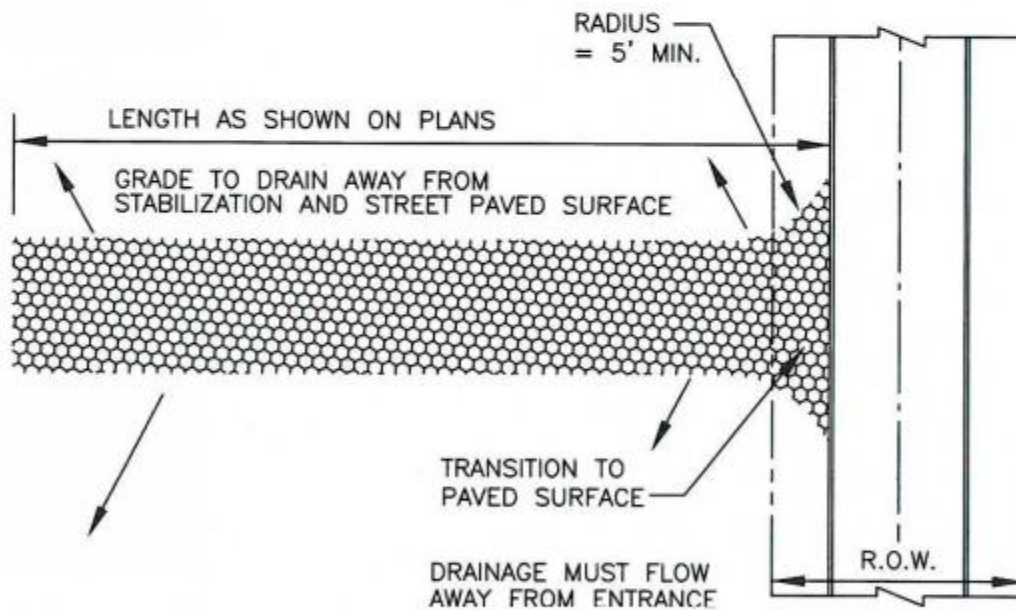
SILT FENCE GENERAL NOTES:

1. POSTS WHICH SUPPORT THE SILT FENCE SHALL BE INSTALLED ON A SLIGHT ANGLE TOWARD THE ANTICIPATED RUNOFF SOURCE. POST MUST BE EMBEDDED A MINIMUM OF ONE FOOT.
2. THE TOE OF THE SILT FENCE SHALL BE TRENCHED IN WITH A SPADE OR MECHANICAL TRENCHER, SO THAT THE DOWNSLOPE FACE OF THE TRENCH IS FLAT AND PERPENDICULAR TO THE LINE OF FLOW. WHERE FENCE CANNOT BE TRENCHED IN (e.g. PAVEMENT), WEIGHT FABRIC FLAP WITH ROCK ON UPHILL SIDE TO PREVENT FLOW FROM SEEPING UNDER FENCE.
3. THE TRENCH MUST BE A MINIMUM OF 6 INCHES DEEP AND 6 INCHES WIDE TO ALLOW FOR THE SILT FENCE FABRIC TO BE LAID IN THE GROUND AND BACKFILLED WITH COMPACTED MATERIAL.
4. SILT FENCE SHOULD BE SECURELY FASTENED TO EACH SUPPORT POST OR TO WIRE BACKING, WHICH IN TURN IS ATTACHED TO THE FENCE POST. THERE SHALL BE A 3 FOOT OVERLAP, SECURELY FASTENED WHERE ENDS OF FABRIC MEET.
5. INSPECTION SHALL BE AS SPECIFIED IN THE SWPPP. REPAIR OR REPLACEMENT SHALL BE MADE PROMPTLY AS NEEDED.
6. SILT FENCE SHALL BE REMOVED WHEN FINAL STABILIZATION IS ACHIEVED OR ANOTHER EROSION OR SEDIMENT CONTROL DEVICE IS EMPLOYED.
7. ACCUMULATED SILT SHALL BE REMOVED WHEN IT REACHES A DEPTH OF HALF THE HEIGHT OF THE FENCE. THE SILT SHALL BE DISPOSED OF AT AN APPROVED SITE AND IN SUCH A MANNER AS TO NOT CONTRIBUTE TO ADDITIONAL SILTATION.
8. FILTER STONE SHALL BE WRAPPED IN FILTER FABRIC AND BURIED SIX (6") INCHES MINIMUM.

SILT FENCE	CITY OF ROCKWALL 	STANDARD SPECIFICATION REFERENCE 202.5 *	
		DATE Mar. 2018	STANDARD DRAWING NO. R-1020B



PROFILE VIEW
N.T.S.



PLAN VIEW
N.T.S.

Note: No crushed
concrete or recycled
concrete allowed.

STABILIZED CONSTRUCTION
ENTRANCE

CITY OF ROCKWALL



STANDARD SPECIFICATION REFERENCE
202.11 *

DATE
Mar. 2018

STANDARD DRAWING NO.
R-1070A

STABILIZED CONSTRUCTION ENTRANCE GENERAL NOTES:

1. STONE SHALL BE 4 TO 6 INCH DIAMETER COARSE AGGREGATE.
2. MINIMUM LENGTH SHALL BE 50 FEET AND WIDTH SHALL BE 20 FEET.
3. THE THICKNESS SHALL NOT BE LESS THAN 12 INCHES.
4. THE WIDTH SHALL BE NO LESS THAN THE FULL WIDTH OF ALL POINTS OF INGRESS OR EGRESS.
5. WHEN NECESSARY, VEHICLES SHALL BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTRANCE ONTO A PUBLIC ROADWAY. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE WITH DRAINAGE FLOWING AWAY FROM BOTH THE STREET AND THE STABILIZED ENTRANCE. ALL SEDIMENT SHALL BE PREVENTED FROM ENTERING ANY STORM DRAIN, DITCH OR WATERCOURSE USING APPROVED METHODS.
6. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PAVED SURFACES. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND. ALL SEDIMENT SPILLED, DROPPED, WASHED, OR TRACKED ONTO PAVED SURFACES MUST BE REMOVED IMMEDIATELY.
7. THE ENTRANCE MUST BE PROPERLY GRADED OR INCORPORATE A DRAINAGE SWALE TO PREVENT RUNOFF FROM LEAVING THE CONSTRUCTION SITE.
8. PREVENT SHORTCUTTING OF THE FULL LENGTH OF THE CONSTRUCTION ENTRANCE BY INSTALLING BARRIERS AS NECESSARY.
9. INSPECTION SHALL BE AS SPECIFIED IN THE SWPPP.
10. NO CRUSHED OR RECYCLED CONCRETE ALLOWED.

STABILIZED CONSTRUCTION
ENTRANCE

CITY OF ROCKWALL



STANDARD SPECIFICATION REFERENCE

202.II *

DATE

Mar. 2018

STANDARD DRAWING NO.

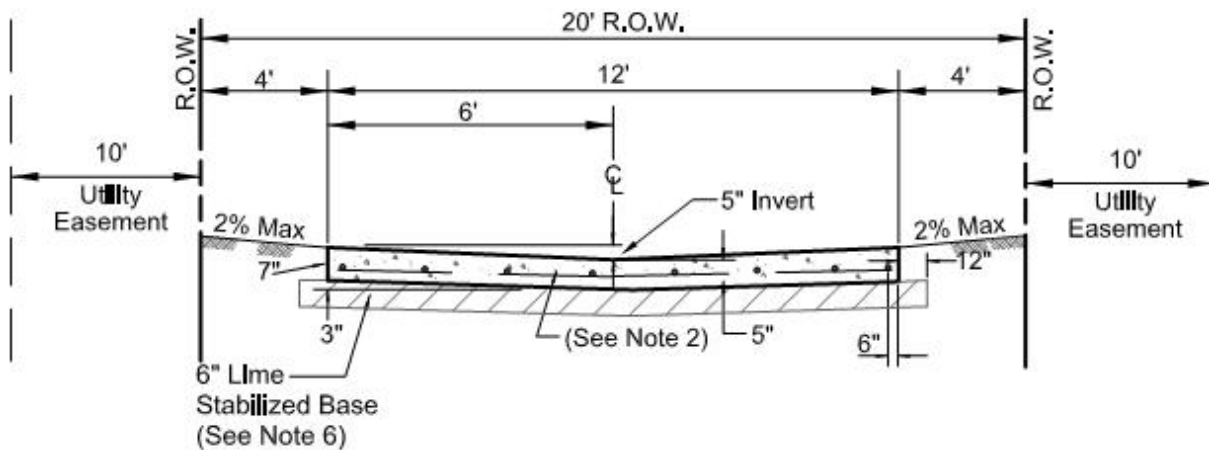
R-1070B

Division 2000 Pavement Systems

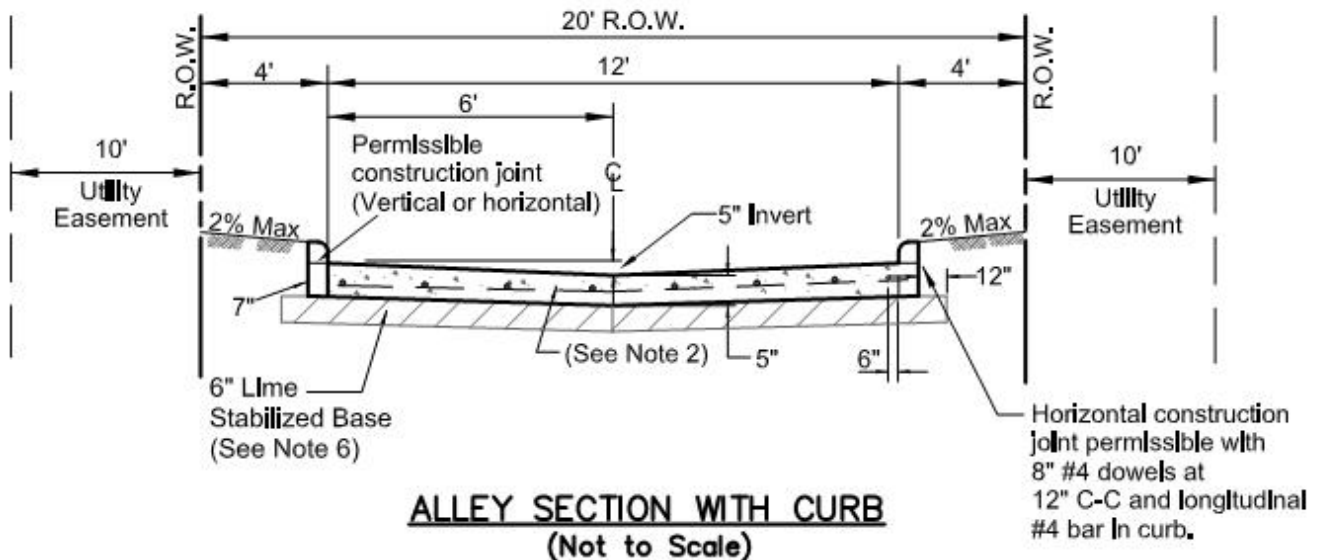
- NOTE:**
- (1) Deleted NCTCOG Drawing
 - (2) Revised NCTGOG Drawing (see revisions below)
 - (3) Added Rockwall Standard Drawing (see drawing below)
 - (4) Added Current TxDOT Standards

Table 9.2: Revisions to NCTCOG's Division 2000 Pavement Systems

<u>Revised</u>	<u>Drawing No.</u>	<u>Subject</u>
(1)	2040	Reinforced Concrete Pavement - Alleys
(3)	R-2040	Reinforced Concrete Pavement – Alleys
(1)	2050	Reinforced Concrete Pavement – Joints
(3)	R-2050	Reinforced Concrete Pavement - Joints
(3)	R-2051	Reinforced Concrete Pavement – Longitudinal Butt Joint
	2060	Reinforced Concrete Pavement – Transverse Joint Spacing
(1)	2070	Reinforced Concrete Pavement – Street Headers
(1)	2150A- 2150B	Driveway Approach – Flared Return Type
	2120	Concrete Curb and Gutter – Integral, Separate, and Doweled
(1)	2155	Driveway Approach – Radius Return Type
(3)	R-2150	Driveway Detail – Residential Driveway
(3)	R-2151A	Residential Driveway – Sidewalk Adjacent to Curb – High Side of the Street
(3)	R-2151B	Residential Driveway – Sidewalk Adjacent to Curb – High Side of the Street
(3)	R-2152	Residential Driveway – Sidewalk Adjacent to Curb – Driveways Closer Than 27-FT
(1)	2160	Alley Approach – Radius Return Type
(3)	R-2160	Alley Approach – Radius Return Type
(1)	2170	Reinforced Concrete Sidewalks – Joints and Spacing
(3)	R-2170	Reinforced Concrete Sidewalks – Joints and Spacing
(1)	2190	Pavement Systems – General Notes
(3)	R-2190	Pavement Systems – General Notes
(3)	R-2251	Alley Geometrics – Alley Warping at Inlet
(3)	R-2300	Street Regulatory Sign – Street Name Blades



ALLEY SECTION WITHOUT CURB
(Not to Scale)



ALLEY SECTION WITH CURB
(Not to Scale)

NOTES:

1. Provide sawed transverse contraction joints not more than 20' C-C.
2. Reinforced with no. 3 bars at 24" C-C both ways.
3. Expansion joints to be placed at all intersections and not to exceed 600' between joints.
4. Concrete shall be 7"-5"-7" Thick 3,600 P.S.I., Alley cement content shall be min. 6.0 sack for machine placed and 6.5 sack mix for hand placed.
5. No sand allowed under pavement.
6. Minimum lime content shall be 6% of dry weight of material (at least 27 lbs/SY) compacted to 95% standard density.

REINFORCED CONCRETE PAVEMENT

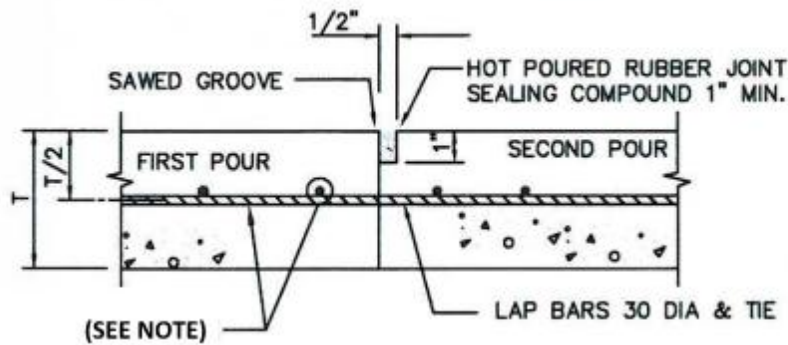
ALLEYS

CITY OF ROCKWALL



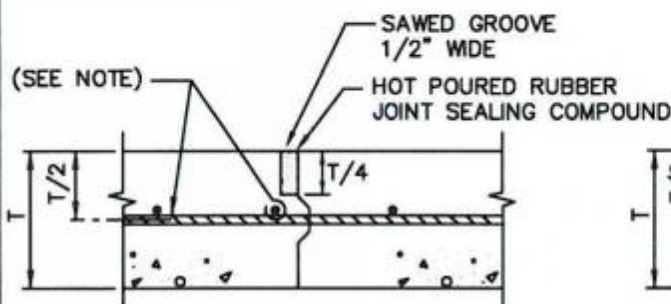
DATE
AUG '19

DRAWING NO.
R-2040



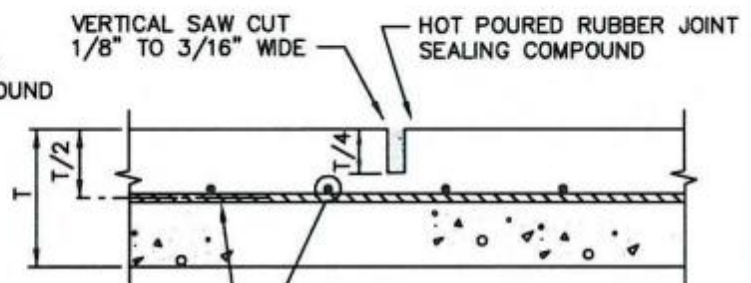
CONSTRUCTION JOINT

N.T.S.



KEYWAY JOINT

(FOR PAVEMENT THICKNESS > 6")
N.T.S.

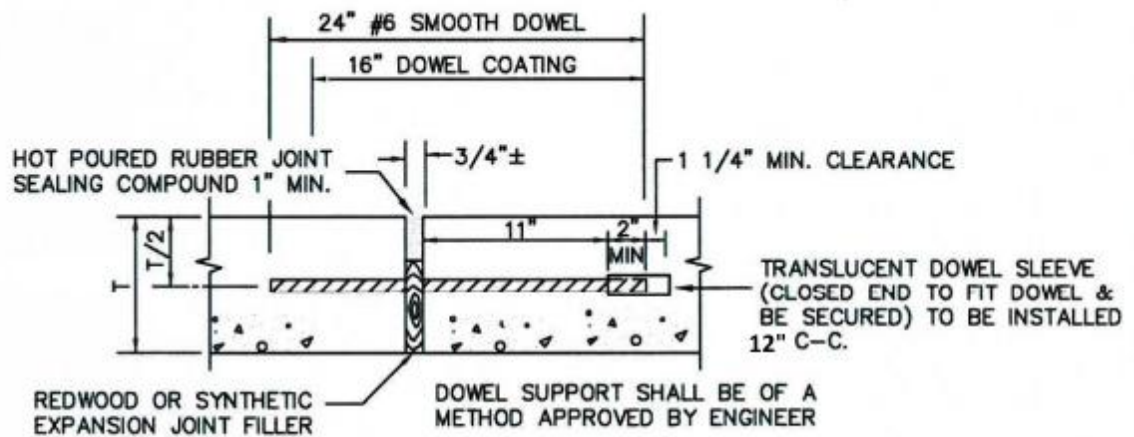


SAWED CONTRACTION JOINT

N.T.S.

NOTE:

REINFORCING SHALL BE - #3 BARS AT 24" FOR 6" THICK PAVEMENT AND LESS. #4 BARS AT 18" FOR 8" THICK PAVEMENT AND GREATER.



EXPANSION JOINT

(SPACED 600 FT. MAXIMUM; LOCATE AT STRUCTURES AND AT INTERSECTION P.C.'S & P.T.'S)
N.T.S.

REINFORCED CONCRETE PAVEMENT

JOINTS

CITY OF ROCKWALL



STANDARD SPECIFICATION REFERENCE

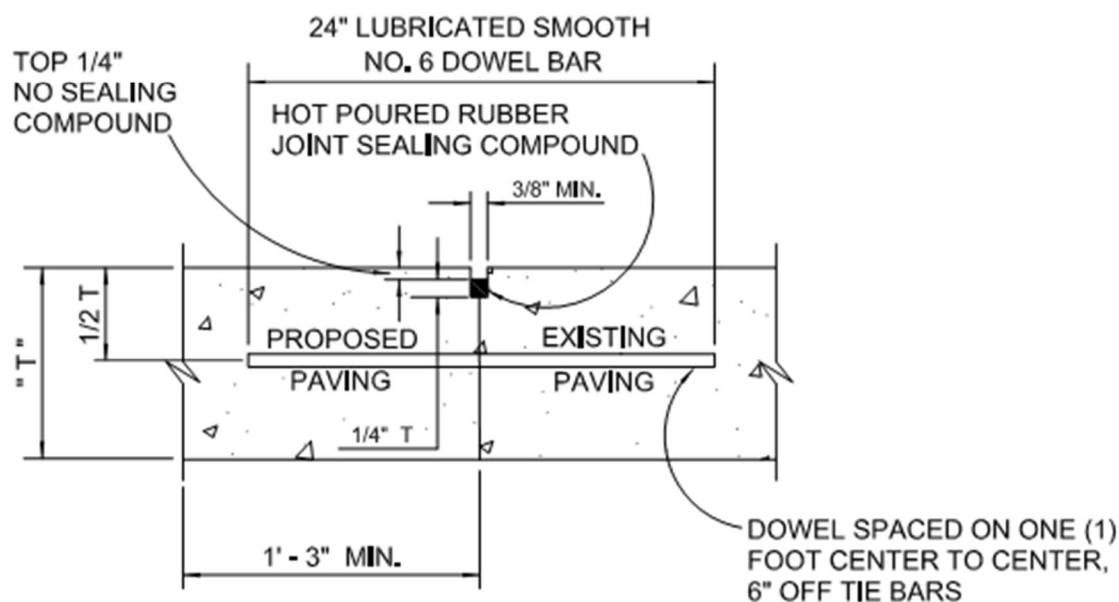
303.5.4.

DATE

Mar. 2018

STANDARD DRAWING NO.

R-2050



NOTES: T = PAVEMENT

1. LONGITUDINAL BUTT CONSTRUCTION MAY BE UTILIZED IN PLACE OF LONGITUDINAL HINGED (KEYWAY) JOINT AT CONTRACTORS OPTION.
2. DOWEL BARS SHALL BE DRILLED INTO PAVEMENT HORIZONTALLY BY USE OF A MECHANICAL RIG.
3. DRILLING BY HAND IS NOT ACCEPTABLE, PUSHING DOWEL BARS INTO GREEN CONCRETE NOT ACCEPTABLE.

LONGITUDINAL BUTT JOINT
NOT TO SCALE

REINFORCED CONCRETE PAVEMENT

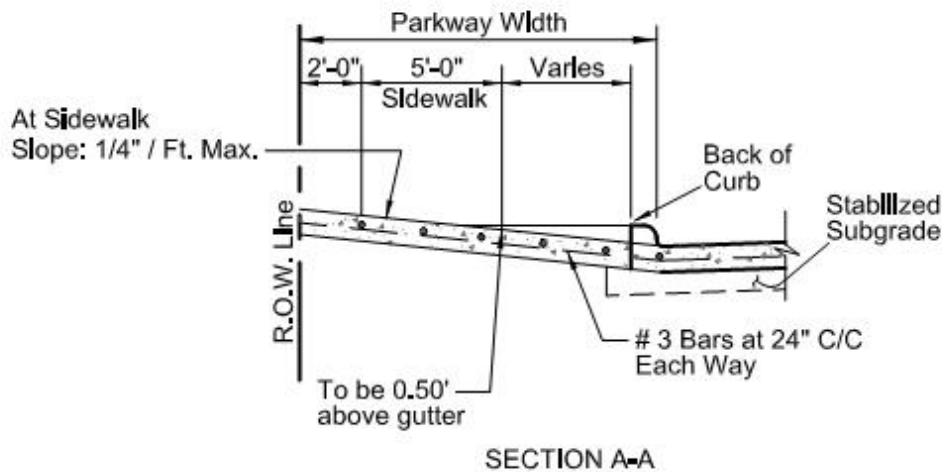
LONGITUDINAL BUTT JOINT

CITY OF ROCKWALL



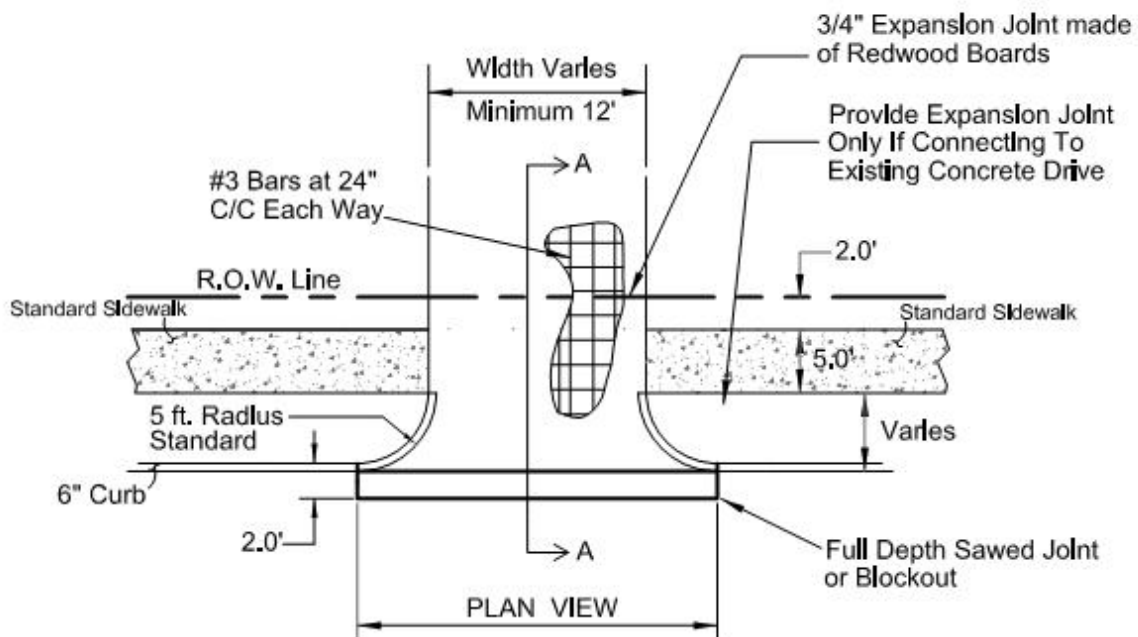
DATE
OCT. '17

DRAWING NO.
R-2051



NOTE:

Sidewalk section thru driveway to be poured same thickness as driveway - 6" Thick 3,600 P.S.I. Reinf. Conc. Pgmt. w/ #3 Bars @ 24" O.C.E.W. (Grade 60 Steel)



DRIVEWAY DETAILS
(Not to Scale)

DRIVEWAY DETAIL

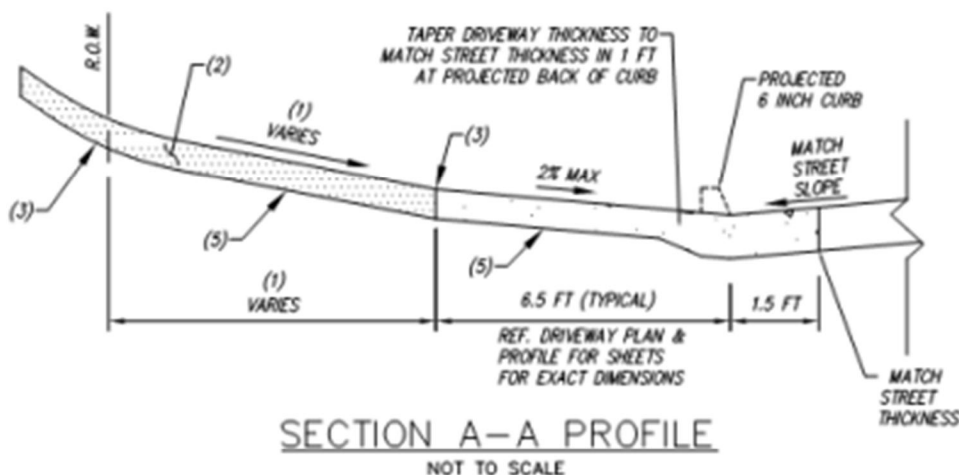
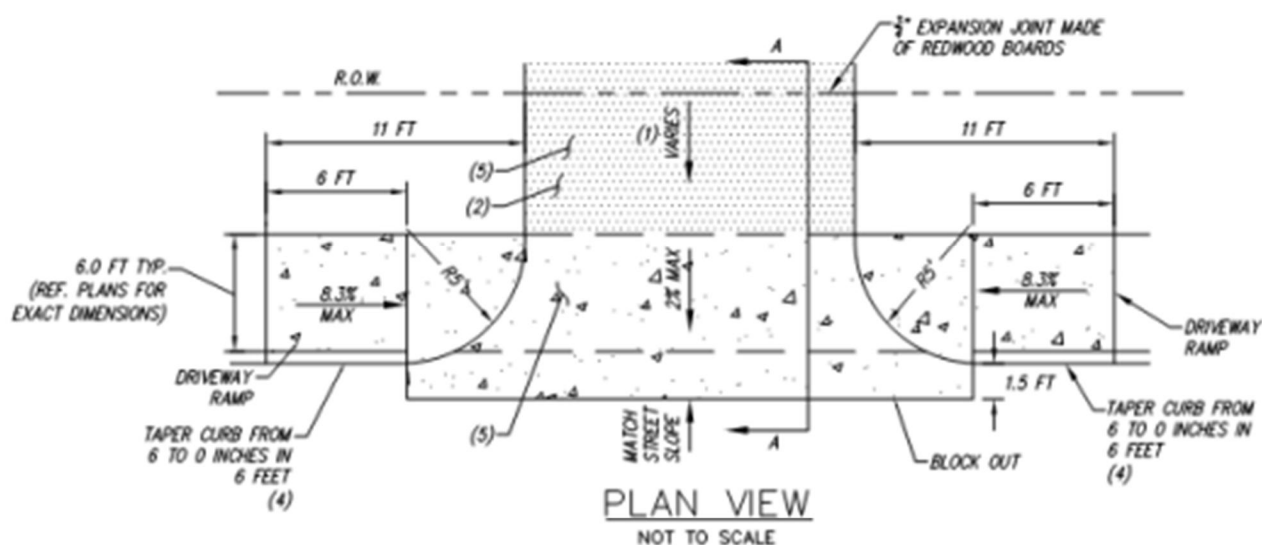
RESIDENTIAL DRIVEWAY

CITY OF ROCKWALL



DATE
AUG '19

DRAWING NO.
R-2150



- (1) REFERENCE DRIVEWAY PLAN AND PROFILE SHEETS FOR EXACT GRADES AND VERTICAL CURVE INFORMATION
- (2) FOR ROAD RECONSTRUCTION PROJECTS THE DRIVEWAY MATERIAL/FINISH TYPE BEHIND THE SIDEWALK SHALL MATCH THE EXISTING DRIVEWAY MATERIAL TYPE/FINISH (EXPOSED AGGREGATE, STAMPED STAINED, PAVERS, ETC.) THE SIDEWALK CROSSING SHALL BE STANDARD BROOM FINISH.
- (3) VERTICAL CURVES SHALL BE INSTALLED PER THE DRIVEWAY PROFILE FOUND IN THE PLAN SET. WHEN DRIVEWAY PROFILES ARE NOT PROVIDED VERTICAL CURVES SHALL BE INSTALLED WHEN AN ALGEBRAIC CHANGE IN GRADE OCCURS WITHIN A DRIVEWAY OF MORE THAN 4%. THE MINIMUM RECOMMENDED LENGTHS OF VERTICAL CURVE FOR THE CORRESPONDING CHANGE IN GRADE FOR DRIVEWAY PROFILES ARE SHOWN IN THE TABLE. IT IS RECOMMENDED TO PUT A 2 FOOT VERTICAL CURVE WHERE EVER THE ALGEBRAIC CHANGE IN GRADE IS LESS THAN 4%.
- (4) SAWCUTTING OF CURB FOR CURB HEIGHT TAPER WILL NOT BE ALLOWED. FULL DRIVEWAY AND SIDEWALK PANEL REPLACEMENT WILL BE REQUIRED IF SAWCUTTING OCCURS.
- (5) REINFORCED CONCRETE SHALL BE MIN. 6" THICK, 3,600 PSI (6.5 SACK/CY) W/ #3 BARS @ 24" O.C.E.W.

ALGEBRAIC CHANGE IN GRADE	VERTICAL CURVE LENGTHS FOR DRIVEWAYS	
	MINIMUM LENGTH (FT)	
	CREST CURVE	SAG CURVE
< 4%	2	2
4% - 5%	5	6
6% - 8%	5	7
9% - 12%	6	8

RESIDENTIAL DRIVEWAY - SIDEWALK ADJACENT TO CURB

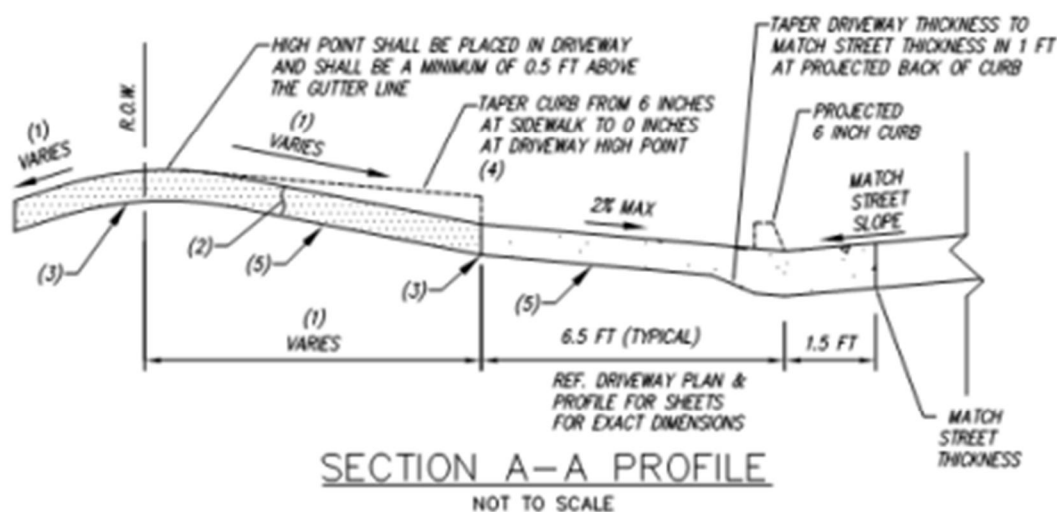
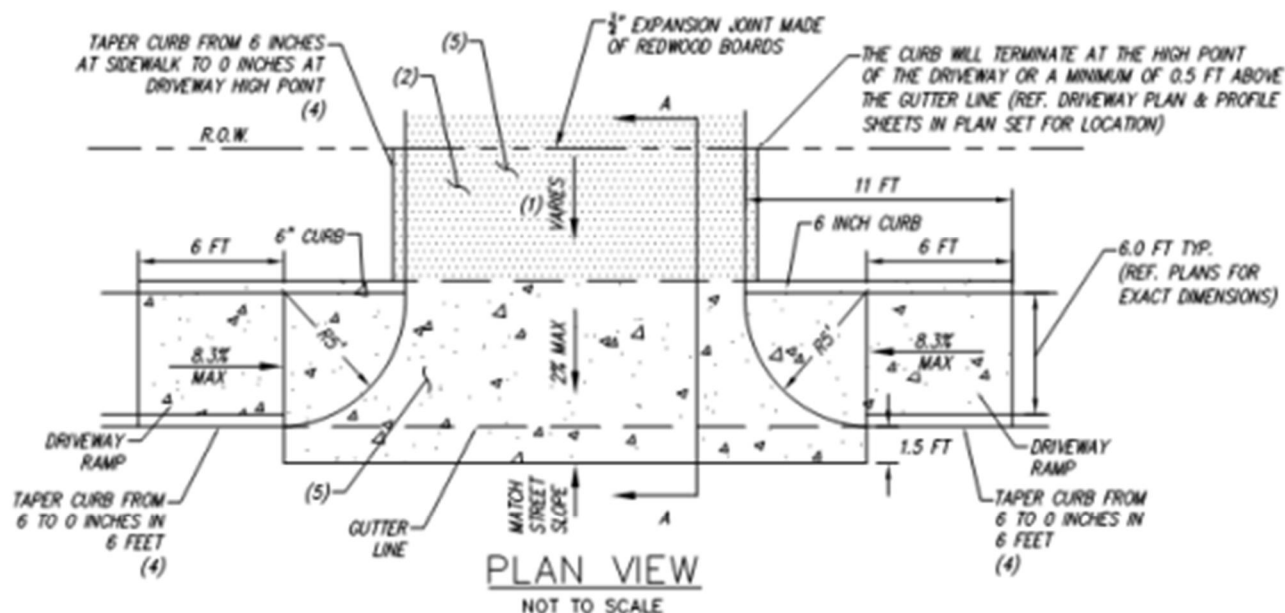
HIGH SIDE OF STREET

CITY OF ROCKWALL



DATE
MAY '21

DRAWING NO.
R-2151A



- (1) REFERENCE DRIVEWAY PLAN AND PROFILE SHEETS FOR EXACT GRADES AND VERTICAL CURVE INFORMATION
- (2) FOR ROAD RECONSTRUCTION PROJECTS THE DRIVEWAY MATERIAL/FINISH TYPE BEHIND THE SIDEWALK SHALL MATCH THE EXISTING DRIVEWAY MATERIAL TYPE/FINISH (EXPOSED AGGREGATE, STAMPED STAINED, PAVERS, ETC.) THE SIDEWALK CROSSING SHALL BE STANDARD BROOM FINISH.
- (3) VERTICAL CURVES SHALL BE INSTALLED PER THE DRIVEWAY PROFILE FOUND IN THE PLAN SET. WHEN DRIVEWAY PROFILES ARE NOT PROVIDED VERTICAL CURVES SHALL BE INSTALLED WHEN AN ALGEBRAIC CHANGE IN GRADE OCCURS WITHIN A DRIVEWAY OF MORE THAN 4%. THE MINIMUM RECOMMENDED LENGTHS OF VERTICAL CURVE FOR THE CORRESPONDING CHANGE IN GRADE FOR DRIVEWAY PROFILES ARE SHOWN IN THE TABLE. IT IS RECOMMENDED TO PUT A 2 FOOT VERTICAL CURVE WHERE EVER THE ALGEBRAIC CHANGE IN GRADE IS LESS THAN 4%.
- (4) SAWCUTTING OF CURB FOR CURB HEIGHT TAPER WILL NOT BE ALLOWED. FULL DRIVEWAY AND SIDEWALK PANEL REPLACEMENT WILL BE REQUIRED IF SAWCUTTING OCCURS.
- (5) REINFORCED CONCRETE SHALL BE MIN. 6" THICK, 3,600 PSI (6.5 SACK/CY) W/ #3 BARS @ 24" O.C.E.W

NOTE: NO DOWNGRADE DRIVEWAYS WILL BE ALLOWED FOR NEW DEVELOPMENT OR NEW CONSTRUCTION.

VERTICAL CURVE LENGTHS FOR DRIVEWAYS		
ALGEBRAIC CHANGE IN GRADE	MINIMUM LENGTH (FT)	
	CREST CURVE	SAG CURVE
< 4%	2	2
4% - 5%	5	6
6% - 8%	5	7
9% - 12%	6	8

RESIDENTIAL DRIVEWAY - SIDEWALK ADJACENT TO CURB

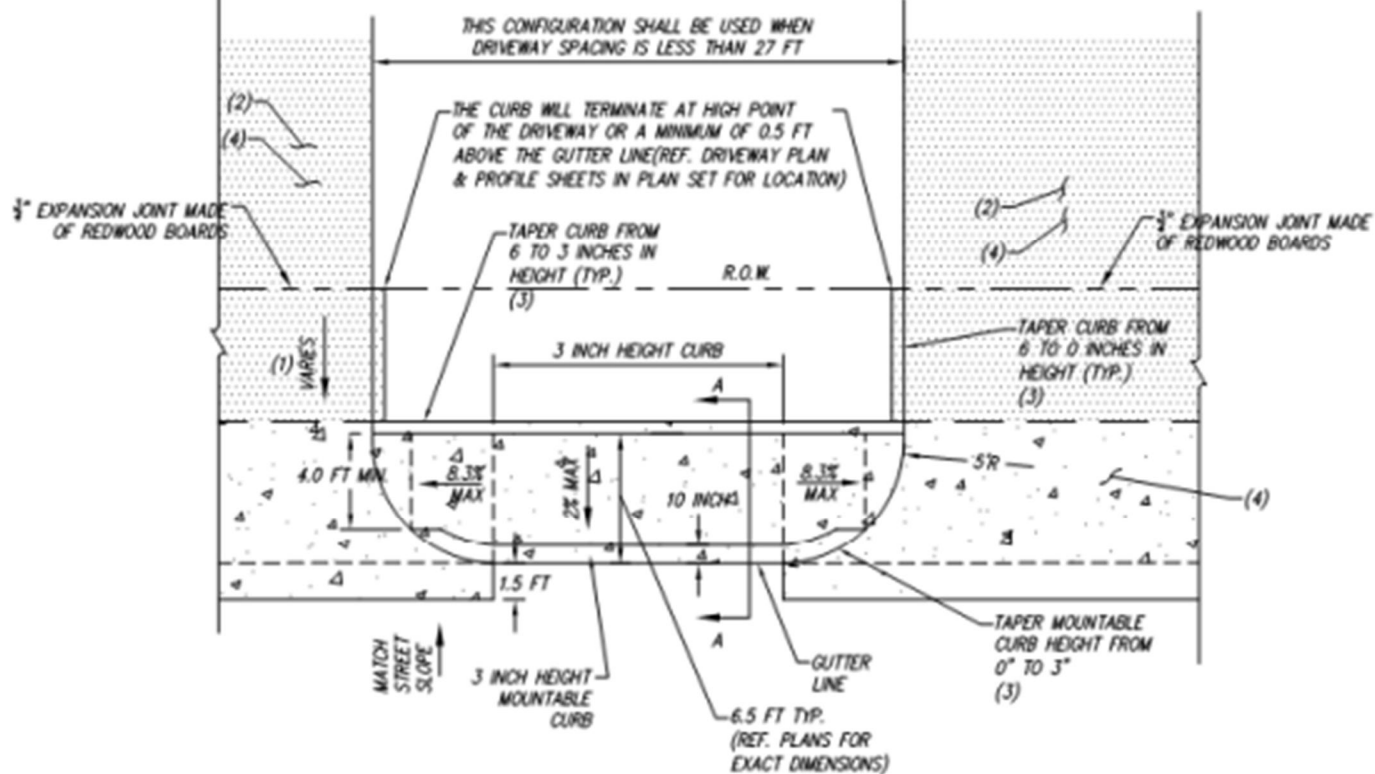
LOW SIDE OF STREET

CITY OF ROCKWALL

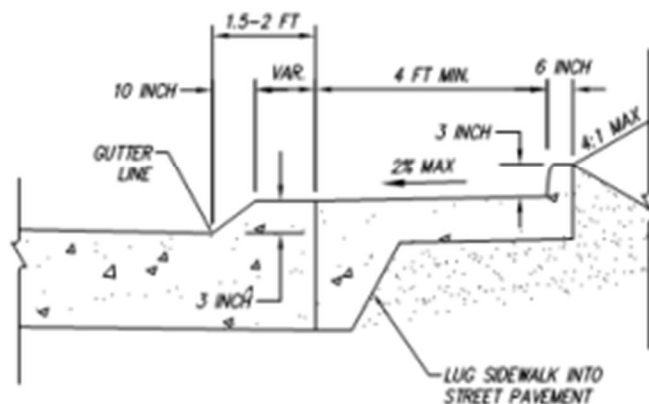


DATE
MAY '21

DRAWING NO.
R-2151B



PLAN VIEW
NOT TO SCALE



SECTION A-A
NOT TO SCALE

- (1) REFERENCE DRIVEWAY PLAN AND PROFILE SHEETS FOR EXACT GRADES AND VERTICAL CURVE INFORMATION
- (2) FOR ROAD RECONSTRUCTION PROJECTS THE DRIVEWAY MATERIAL/FINISH TYPE BEHIND THE SIDEWALK SHALL MATCH THE EXISTING DRIVEWAY MATERIAL TYPE/FINISH (EXPOSED AGGREGATE, STAMPED STAINED, PAVERS, ETC.) THE SIDEWALK CROSSING SHALL BE STANDARD BROOM FINISH.
- (3) SAWCUTTING OF CURB FOR CURB HEIGHT TAPER WILL NOT BE ALLOWED. FULL DRIVEWAY AND SIDEWALK PANEL REPLACEMENT WILL BE REQUIRED IF SAWCUTTING OCCURS.
- (4) DRIVEWAY REINFORCED CONCRETE SHALL BE MIN. 6" THICK, 3,600 PSI (6.5 SACK/CY) W/ #3 BARS @ 24" O.C.E.W

RESIDENTIAL DRIVEWAY - SIDEWALK ADJACENT TO CURB

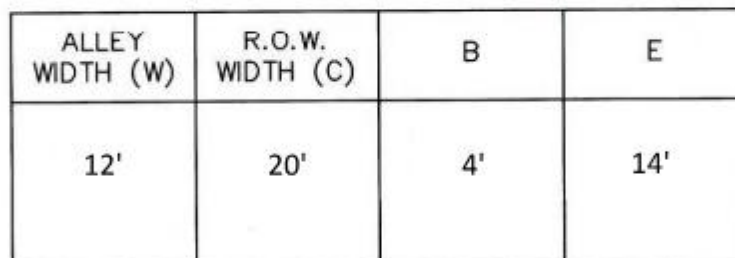
DRIVEWAYS CLOSER THAN 27-FT

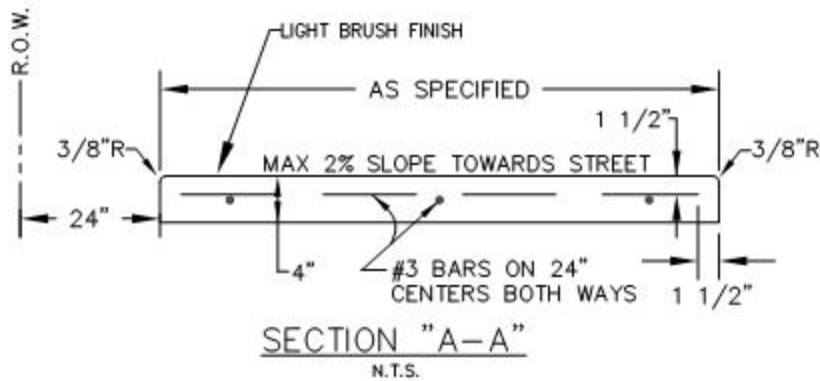
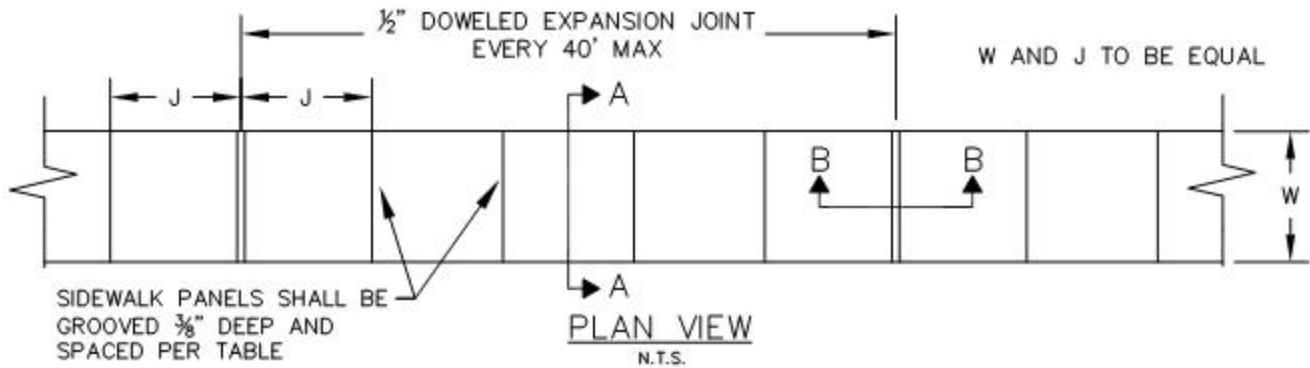
CITY OF ROCKWALL



DATE
MAY '21

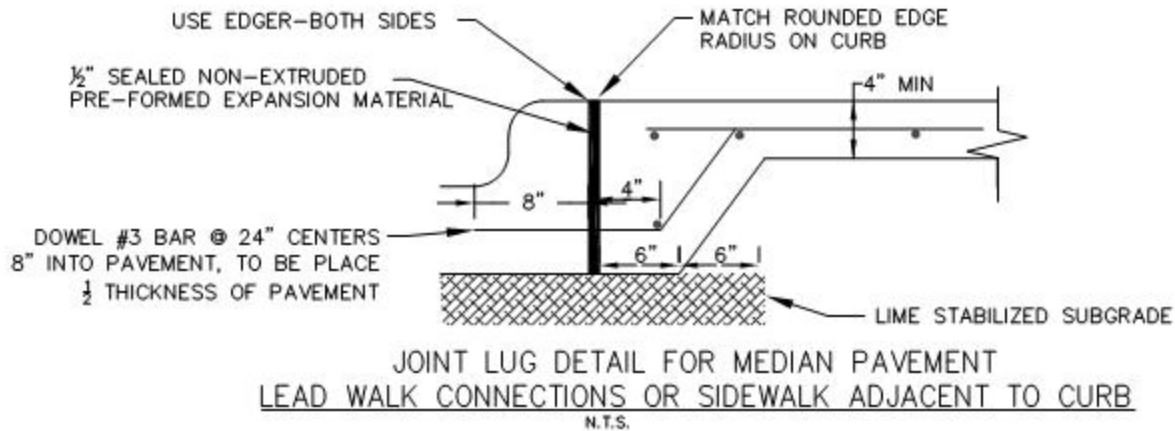
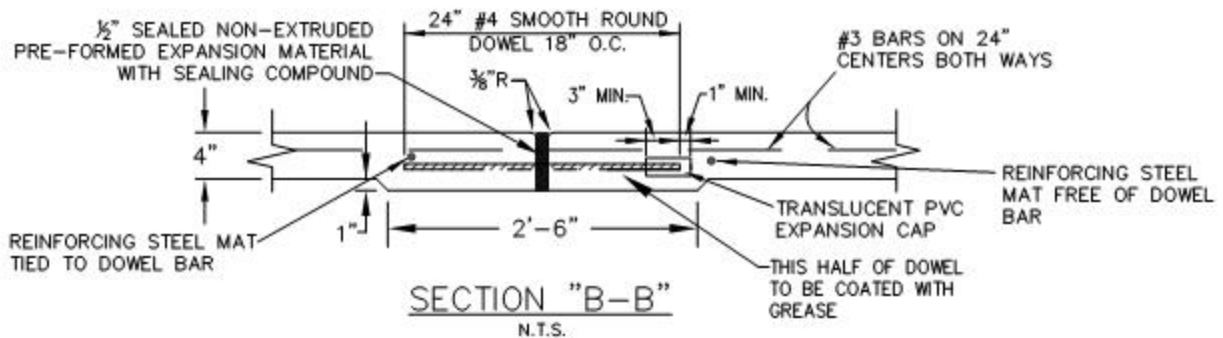
DRAWING NO.
R-2152





NOTES:

1. CROSS SLOPE OF SIDEWALK SHALL BE NO GREATER THAN 2%
2. SIDEWALK CONCRETE WITHIN CITY R.O.W. SHALL BE MINIMUM 3,000 PSI (5.5 SACK/C.Y.) CONCRETE.
3. ALL SIDEWALKS SHALL MAINTAIN POSITIVE DRAINAGE.
4. ALL HONEYCOMB IN BACK OF CURB TO BE TROWEL-PLASTERED BEFORE POURING SIDEWALK.
5. MINIMUM WIDTH OF 6' IF SIDEWALK ADJACENT TO CURB A LUGGED INTO THE CURB.
6. STEEL WIRE MESH IS NOT ACCEPTABLE.



REINFORCED CONCRETE SIDEWALKS

JOINTS AND SPACING

CITY OF ROCKWALL



DATE
AUG '19

DRAWING NO.
R-2170

GENERAL NOTES:

1. REINFORCED CONCRETE PAVEMENT:
 - A. ALL CURBS SHALL BE PLACED INTEGRAL WITH PAVEMENT UNLESS OTHERWISE APPROVED BY THE OWNER.
 - B. CURBS SHALL MEET THE SAME COMPRESSIVE STRENGTH AS SPECIFIED FOR THE PAVEMENT.
 - C. BAR LAPS SHALL BE 30 DIAMETERS.
 - D. REINFORCING BARS SHALL BE SUPPORTED BY CHAIRS OR OTHER DEVICES APPROVED BY THE OWNER.
2. SUBGRADE: (UNLESS OTHERWISE SPECIFIED BY OWNER)
 - A. SUBGRADE UNDER ALL PAVEMENTS SHALL BE STABILIZED TO A MINIMUM DEPTH OF SIX (6") INCHES WITH HYDRATED LIME CEMENT. LABORATORY TESTS WILL BE PERFORMED TO DETERMINE THE AMOUNT OF LIME OR CEMENT TO USE.

PAVEMENT SYSTEMS

GENERAL NOTES

CITY OF ROCKWALL



STANDARD SPECIFICATION REFERENCE

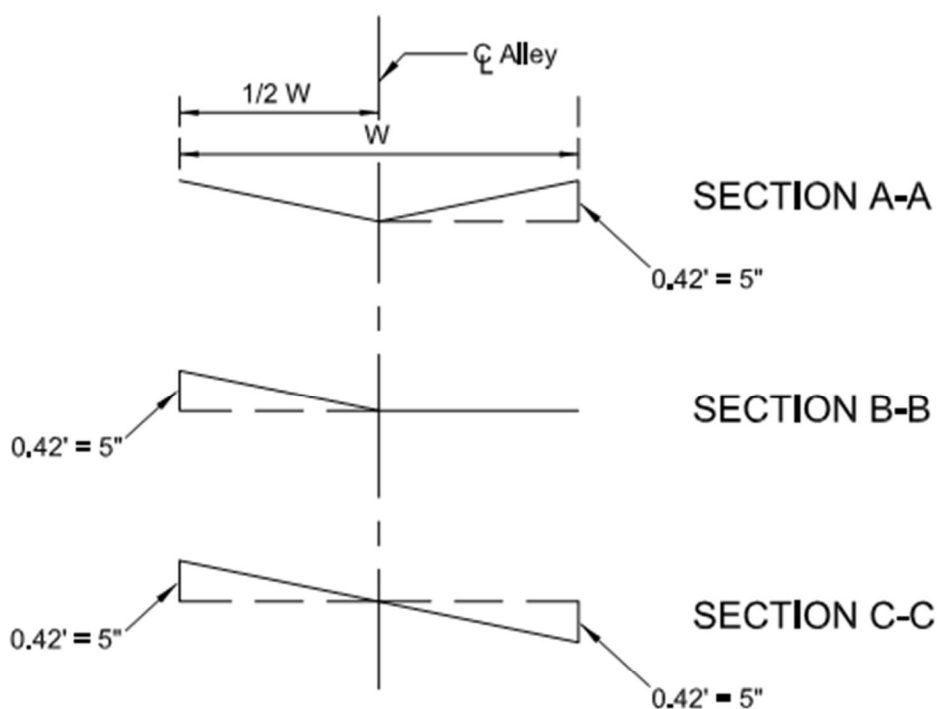
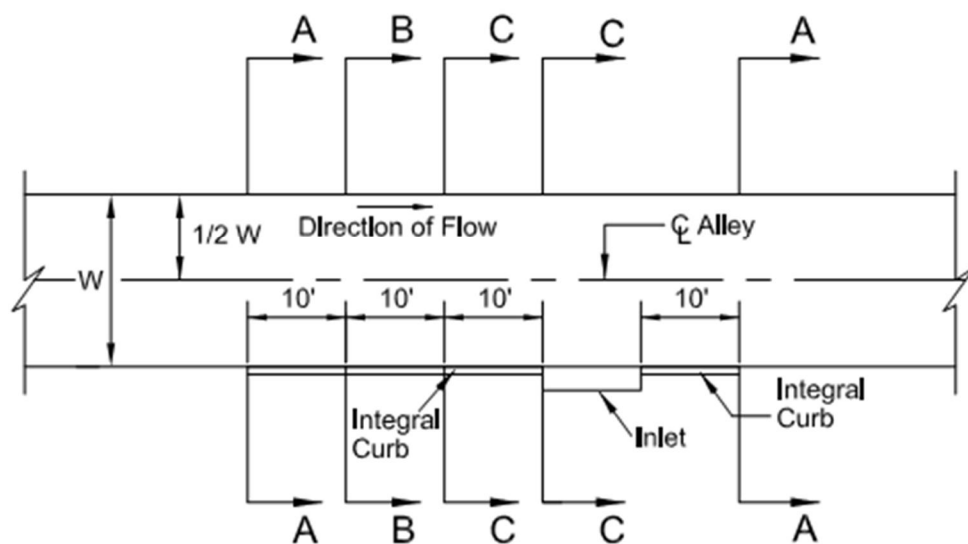
302,303

DATE

Mar. 2018

STANDARD DRAWING NO.

R-2190



TYPICAL ALLEY WARPING AT INLET
(Not to Scale)

ALLEY GEOMETRICS

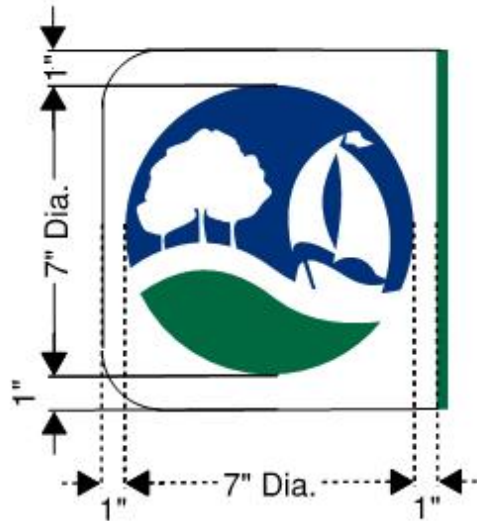
ALLEY WARPING AT INLET

CITY OF ROCKWALL



DATE
OCT. '17

DRAWING NO.
R-2251



Rockwall Logo Detail

NOT TO SCALE

Notes:

1. Street name blades shall consist of white SCOTCHLITE 3930 High Intensity Prismatic Material, digitally printed using HP Latex 360 or higher.

Green: Pantone 335C with overlay CMYK 100-0-20-0 set to darken.

Blue: Pantone 287C.

2. Lettering to be composed of a combination of upper and lowercase letters, with initial uppercase letters. Font to be Clearview TCAD-1w with uppercase to be 6" Min. height and lowercase to be 4.5" Min. height. No more than 65% compression on font width.

3. Lettering for street designations and block numbers to be composed of initial uppercase letters at least 3" Min. height and lower-case letters at least 2.25" Min. height.

4. Sign post to be 2 3/8" O.D. galvanized steel tube sign pole.

STREET SIGN DETAIL

NOT TO SCALE

STREET REGULATORY SIGNAGE

TYPICAL STREET SIGN DETAIL

CITY OF ROCKWALL



DATE
May 2018

DRAWING NO.
R-2300

Division 3000 General Underground Conduit

- NOTE:**
- (1) Deleted NCTCOG Drawing
 - (2) Revised NCTGOG Drawing (see revisions below)
 - (3) Added Rockwall Standard Drawing (see drawing below)
 - (4) Added Current TxDOT Standards

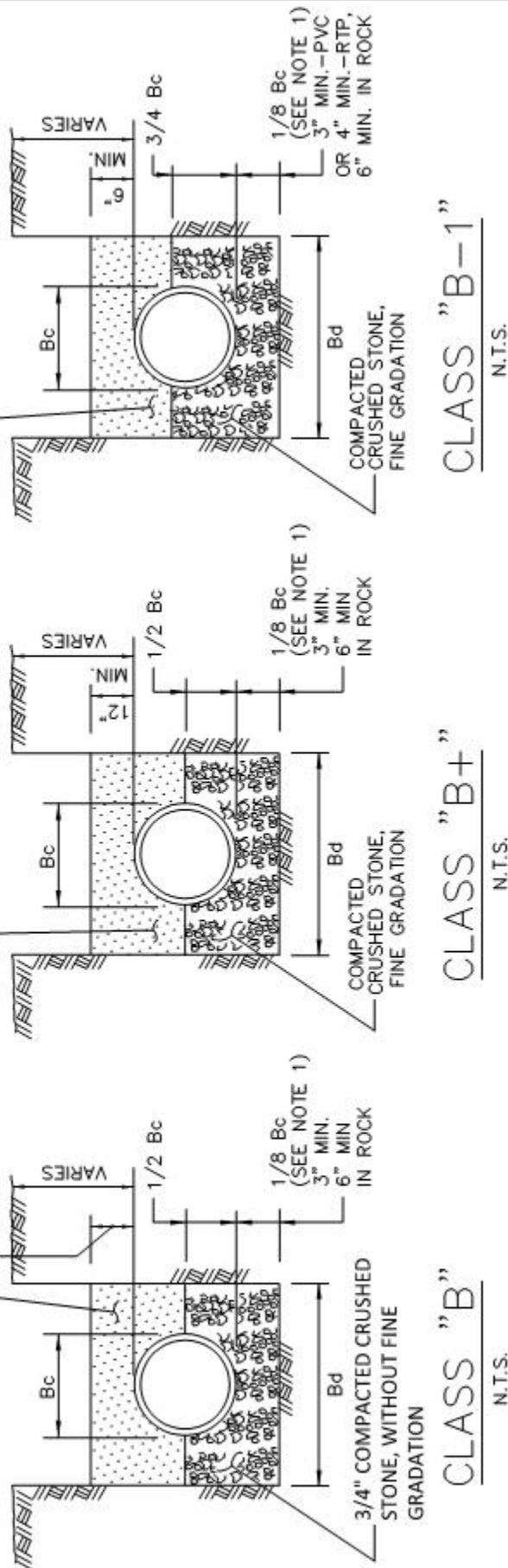
Table 9.3: Revisions to NCTCOG's Division 3000 General Underground Conduit

<u>Revised</u>	<u>Drawing No.</u>	<u>Subject</u>
(1)	3020	Embedment – Class “B”, “B+” & “B-1”
(3)	R-3020	Embedment – Class “B”, “B+” & “B-1”
(1)	3030	Embedment – Class “B-2”, “B-3” & “B-4”
(3)	R-3030	Embedment – Class “B-2”, “B-3” & “B-4”
(1)	3050	Embedment – Class “D+” & “G”
(3)	R-3050	Embedment – Class “D+” & “G”
(1)	3070A	Pavement Cut and Repair – Concrete and Parkway
(3)	R-3070A	Pavement Cut and Repair – Concrete and Parkway

SELECT OR NON-GRANULAR MATERIAL COMPACTED TO 95% OF STD. PROCTOR DENSITY

AS SHOWN
ON PLANS

GRANULAR MATERIAL COMPACTED
TO 95% OF STD. PROCTOR DENSITY



NOTES:

1. FOR MAINS 42" DIAMETER AND LARGER LARGER, 1/8 Bc SHALL BE TAKEN AS 6".
2. Bc = OUTSIDE DIAMETER OF PIPE
3. Bd = TRENCH WIDTH

STANDARD DRAWING NO.
R-3020

EMBEDMENT

CLASS "B", "B+", & "B-1"

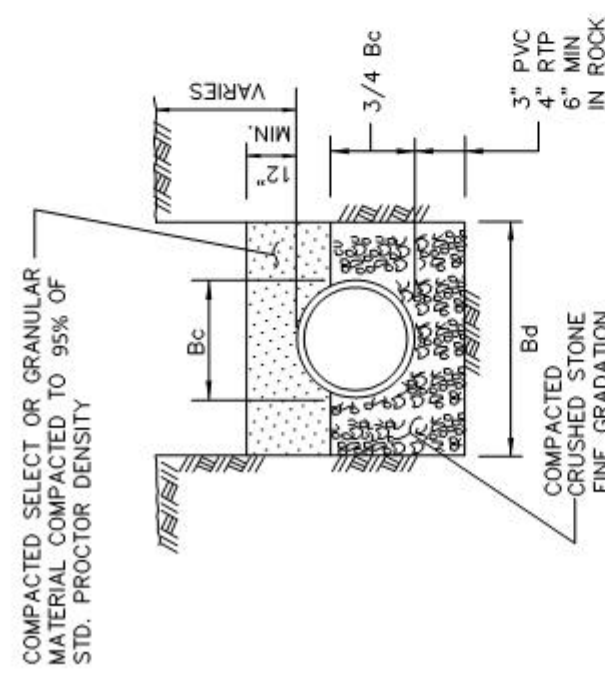
CITY OF ROCKWALL



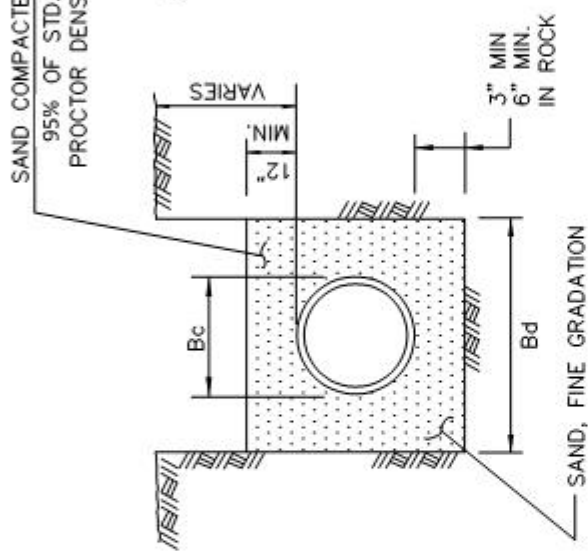
STANDARD SPECIFICATION REFERENCE
504.5

DATE
Mar. 2018

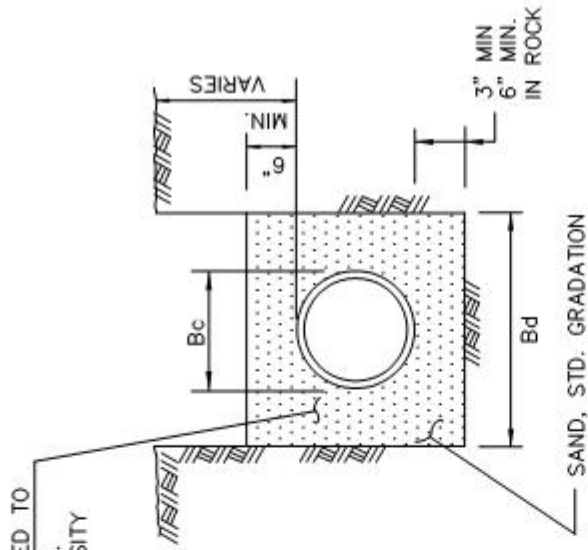
STANDARD DRAWING NO.
R-3020



CLASS "B-2"
N.T.S.



CLASS "B-3"
N.T.S.



CLASS "B-4"
N.T.S.

(TO BE USED FOR PVC WATER PIPE AND
PVC WASTE WATER FORCE MAIN PIPE)

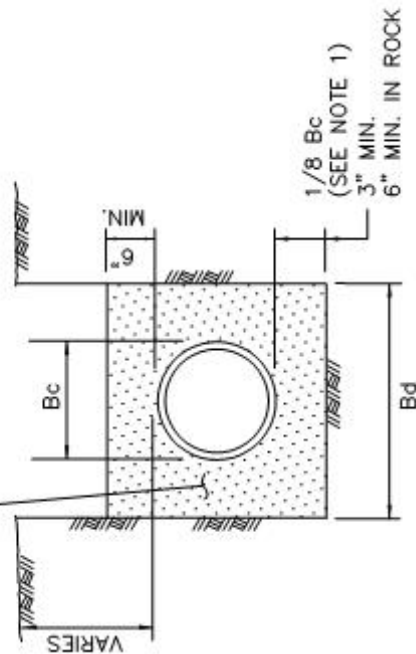
NOTES:

1. Bc = OUTSIDE DIAMETER OF PIPE
2. Bd = TRENCH WIDTH
3. NO GRANULAR MATERIAL ABOVE
ROCK OR STONE EMBEDMENT

STANDARD DRAWING NO.
3030

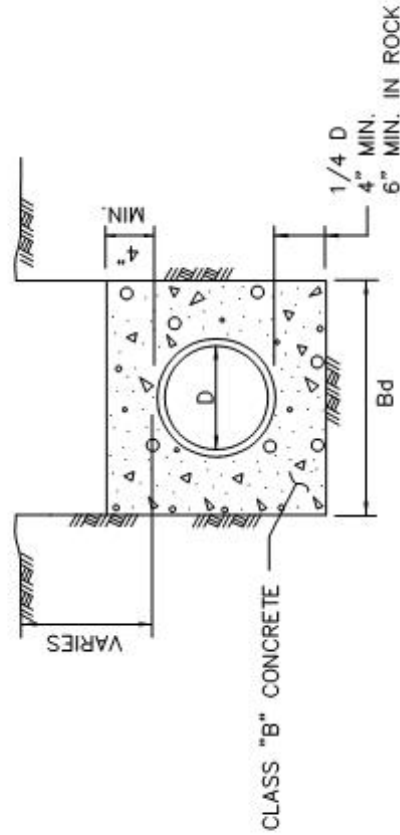
CITY OF ROCKWALL		STANDARD SPECIFICATION REFERENCE 504.5
		DATE AUG. '19
CLASS "B-2", "B-3", & "B-4"		STANDARD DRAWING NO. R-3030

SELECT MATERIAL
COMPACTED TO 95%
STD. PROCTOR DENSITY.



CLASS "D+"

N.T.S.



CLASS "G"

N.T.S.

NOTES:

1. FOR MAINS 42" DIAMETER AND LARGER, 1/8 Bc SHALL BE TAKEN AS 6".
2. Bc = OUTSIDE DIAMETER OF PIPE
3. Bd = TRENCH WIDTH
4. D = INSIDE DIAMETER OF PIPE

STANDARD DRAWING NO.
R-3050

EMBEDMENT

CLASS "D+" & "G"

CITY OF ROCKWALL

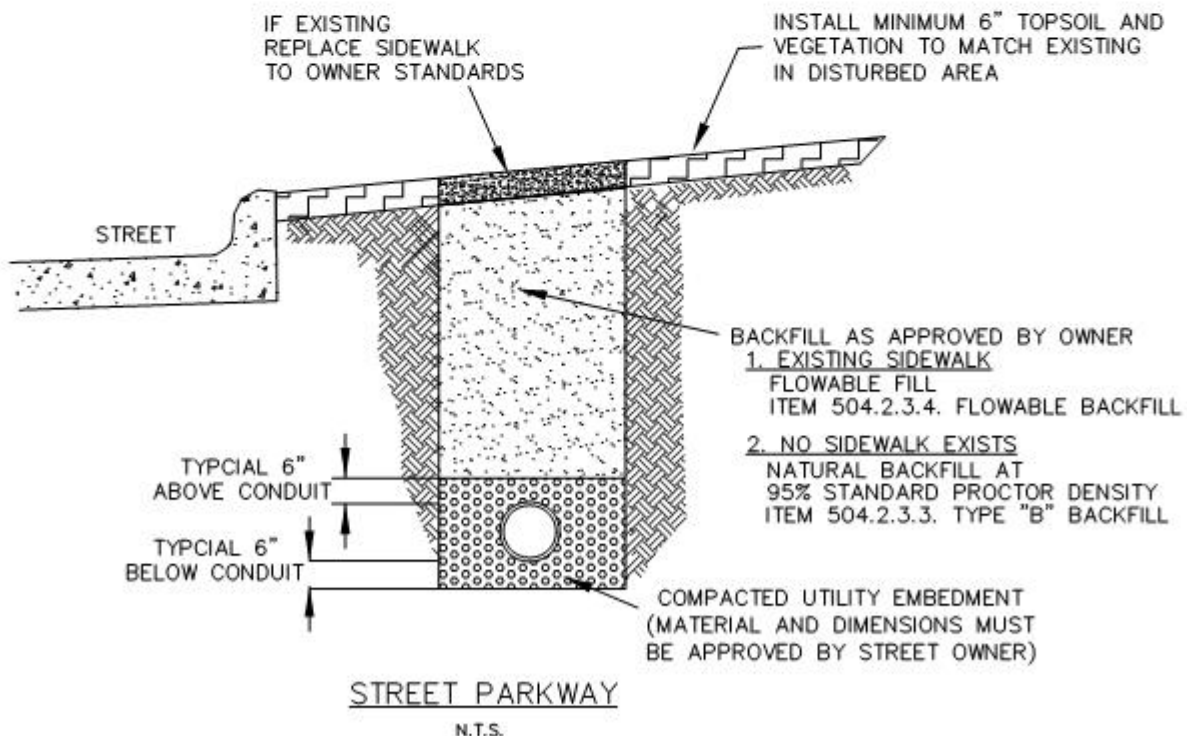
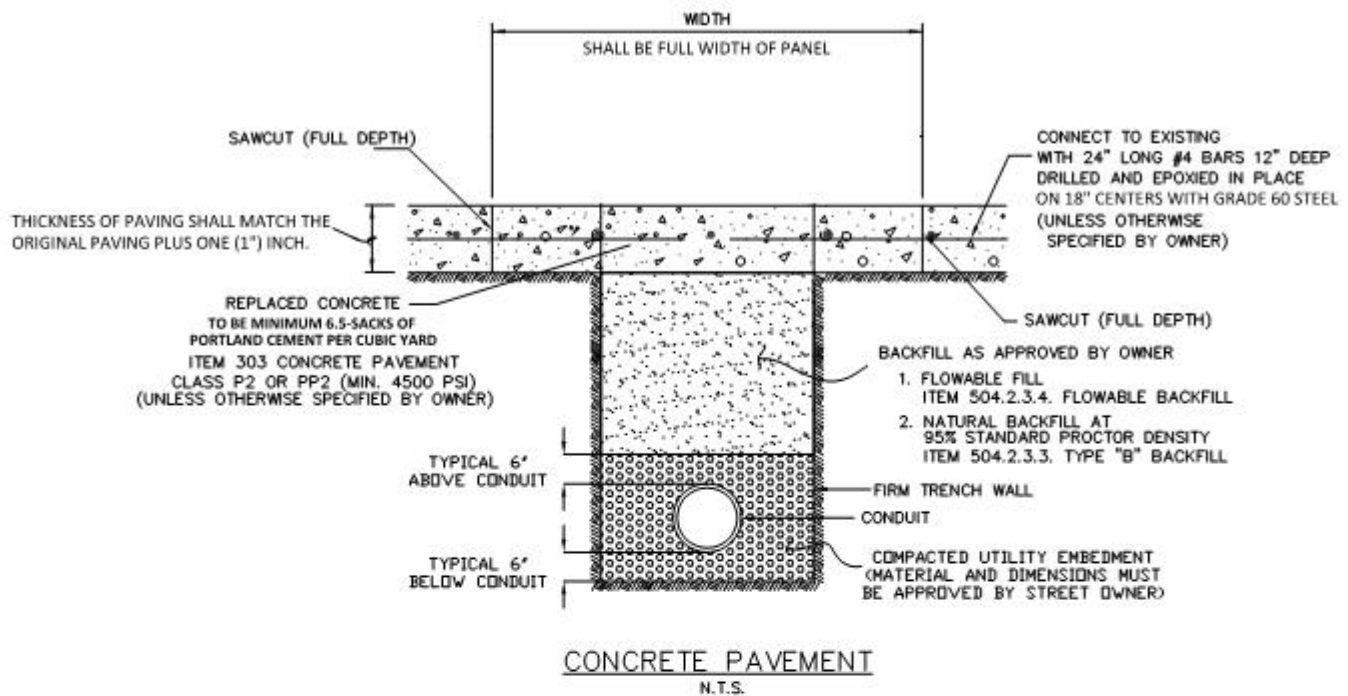


STANDARD SPECIFICATION REFERENCE
504.5

DATE
Mar. 2018

STANDARD DRAWING NO.
R-3050

GENERAL NOTE: CHECK WITH STREET OWNER FOR
SPECIFIC REQUIREMENTS NOT CONTAINED HEREIN



PAVEMENT CUT AND REPAIR
CONCRETE AND PARKWAY

CITY OF ROCKWALL



STANDARD SPECIFICATION REFERENCE

402

DATE

Mar. 2018

STANDARD DRAWING NO.

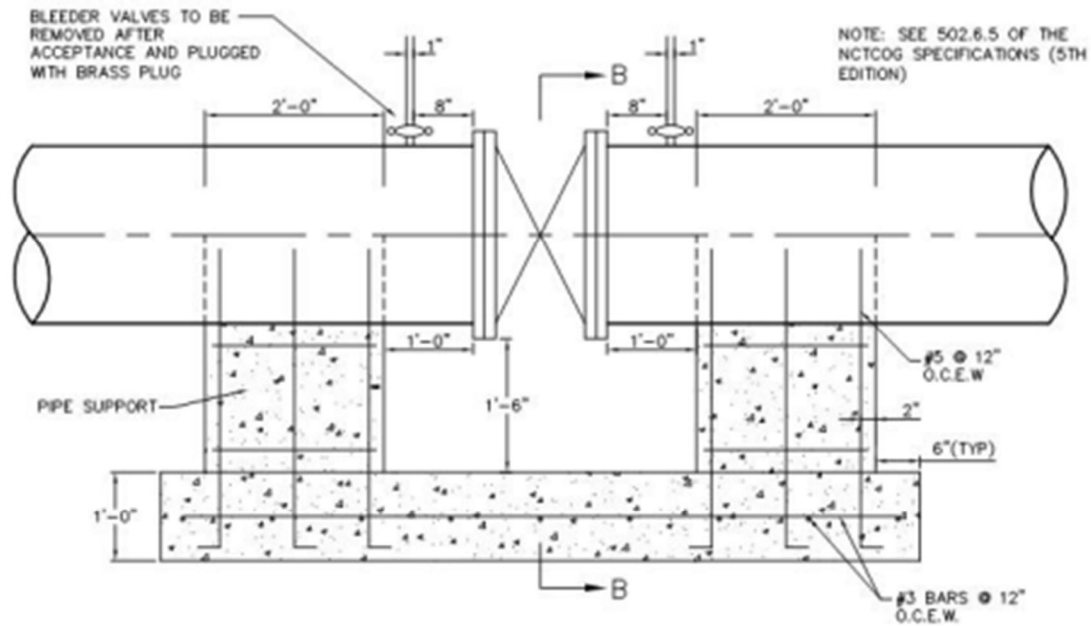
R-3070A

Division 4000 Water Distribution

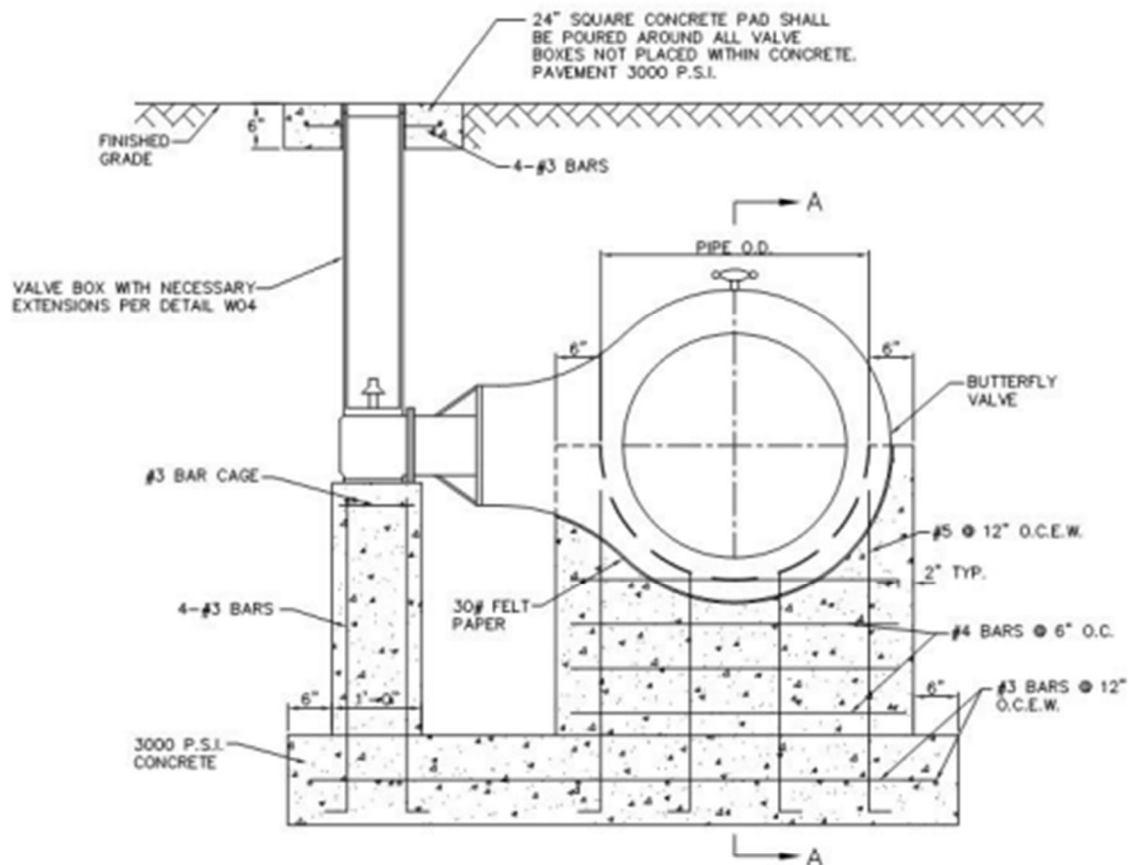
- NOTE:**
- (1) Deleted NCTCOG Drawing
 - (2) Revised NCTGOG Drawing (see revisions below)
 - (3) Added Rockwall Standard Drawing (see drawing below)
 - (4) Added Current TxDOT Standards

Table 9.4: Revisions to NCTCOG's Division 4000 Water Distribution

<u>Revised</u>	<u>Drawing No.</u>	<u>Subject</u>
	4010A	Horizontal Thrust Blocking – At Pipe Bend
	4010B	Horizontal Thrust Blocking – At Pipe Bend
	4010C	Horizontal Thrust Blocking – At Pipe Bend
	4020	Horizontal Thrust Blocking – At Tees and Plugs
	4030	Vertical Thrust Blocking – At Pipe Bend
	4040	Thrust Block – General Notes
(1)	4060A	Vault Construction – Horizontal Gate Valve ≥ 16"
(1)	4060B	Vault Construction – Horizontal Gate Valve ≥ 16"
(3)	R-4060	16" Thru 21" – Horizontal Butterfly Valves
(1)	4090	Combination Air Vacuum Valve – Type "1"
(3)	R-4090	Combination Air Vacuum Valve – Type "1"
	4100A	Combination Air Vacuum Valve – Type "2"
(1)	4120	Fire Hydrant – Installation
(3)	R-4120	Fire Hydrant - Installation
(1)	4130	Water Service Installation – ¾" or 1" Line
(3)	R-4130	Water Service Installation – ¾" or 1" Line
(3)	R-4145	Single Service Meter Tail Connection
(3)	R-4200	Water Main Lowering – Below Wastewater Main



SECTION A-A



SECTION B-B

16" thru 42"

HORIZONTAL BUTTERFLY VALVES

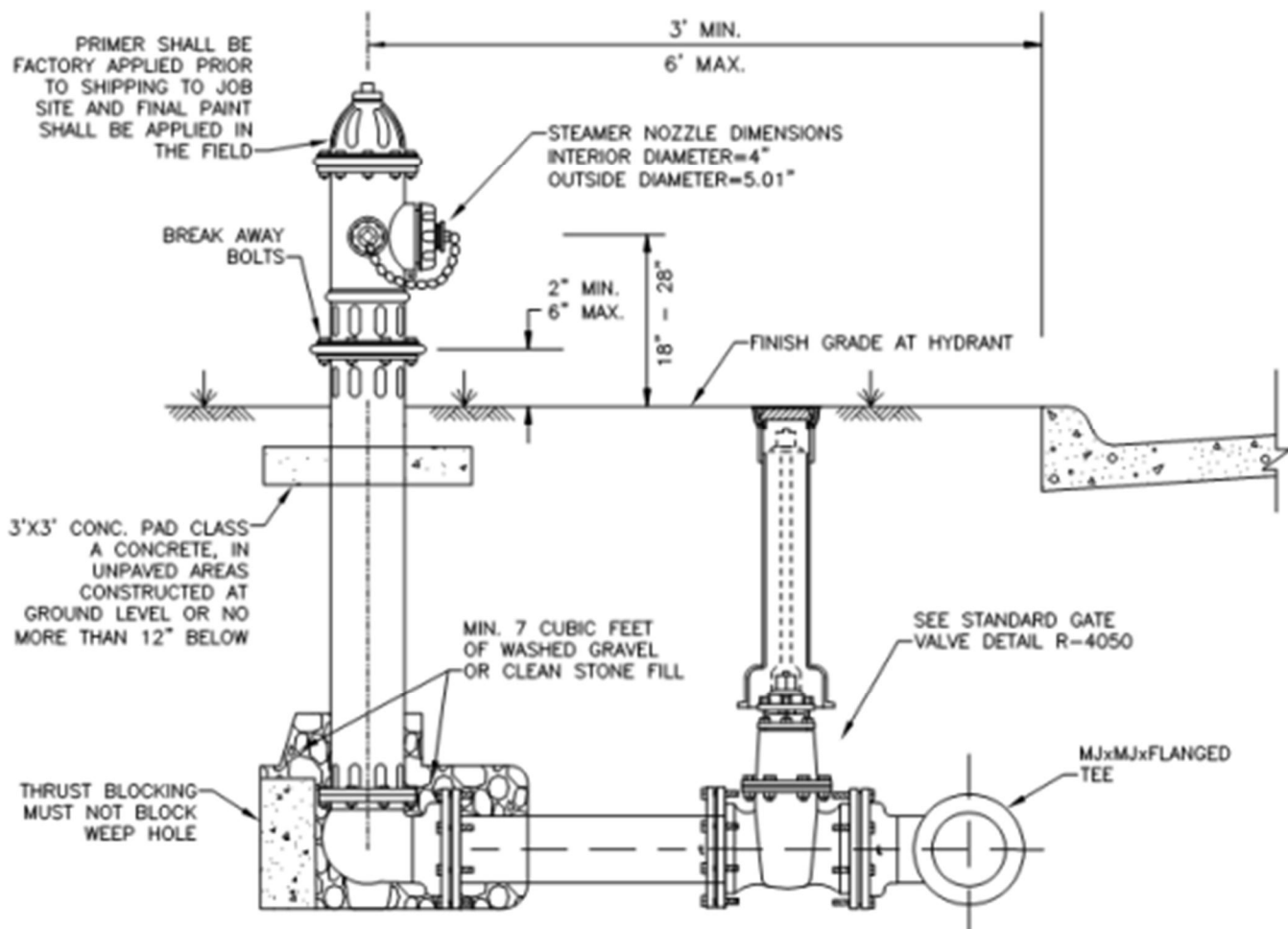
CITY OF ROCKWALL



DATE
MAY 2022

DRAWING NO.
R-4060

[illegible]



NOTES:

1. IN GENERAL, ALL FIRE HYDRANTS SHALL CONFORM TO AWWA STANDARD SPECIFICATIONS FOR FIRE HYDRANTS FOR ORDINARY WATER WORKS SERVICE, C-502. FIRE HYDRANTS SHALL HAVE A 5½" MIN. VALVE OPENING AND A BARREL APPROXIMATELY 7" INSIDE DIAMETER. ALL HYDRANTS SHALL BE EQUIPPED WITH BREAK AWAY FLANGE.
2. ALL JOINTS TO BE RESTRAINED JOINTS. MEGA-LUGS OR APPROVED EQUAL.
3. TYPICAL VALVE: ACTUAL VALVE LOCATION WILL DEPEND ON LOCATION OF WATER MAIN.
4. NO FIRE HYDRANT CLOSER THAN 18" TO EXISTING OR PROPOSED SIDEWALKS. (USUAL)
5. STANDARD BURY DEPTH 4 FEET.
6. SET FIRE HYDRANT ON THE LOT LINE EXTENDED WHEN POSSIBLE.

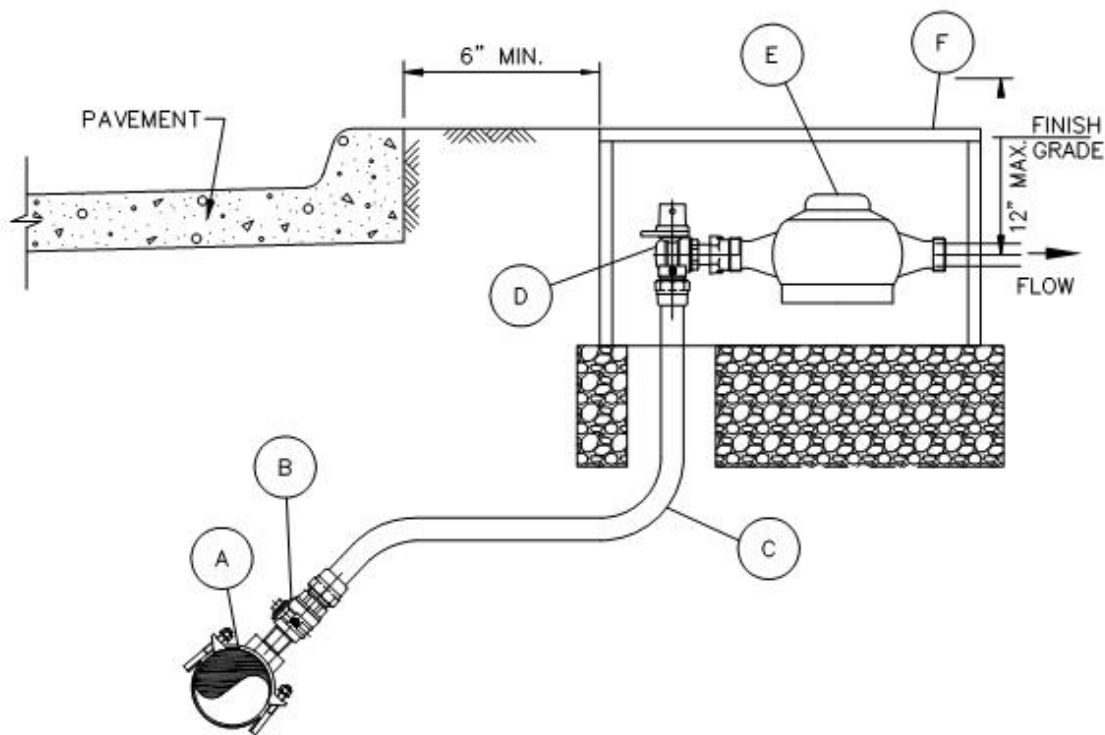
FIRE HYDRANT INSTALLATION

CITY OF ROCKWALL



DATE
MAY '22

DRAWING NO.
R-4120



NOTES:

1. SERVICE PIPE SHALL BE 1" OR 2" SEAMLESS 250 PSI BLUE COLORED POLYETHYLENE ASTM D2737, SDR 9, CTS WATER SERVICE PIPE, NSF61 APPROVED.
2. TOP OF METER BOXES SHALL BE 1" ABOVE FINISHED GRADE.
3. METER BOX SHALL HAVE A MINIMUM OF 6" OF GRAVEL BENEATH METER BOX AS ILLUSTRATED.
4. LOCATION OF THE METER BOX SHALL BE LOCATED TO ALLOW 6" CLEARANCE FROM CURB.

MATERIAL LIST:

- A. SERVICE SADDLE SHALL BE BRASS WITH DOUBLE BRONZE FLATTENED STRAPS OR STAINLESS STEEL DOUBLE BOLT WIDE STRAPS. NO BANDED OR HINGED STRAPS SHALL BE ALLOWED. SERVICE SADDLES SHALL MEET AWWA/CC TAPPING OUTLET (TAPERED THREADS) REQUIREMENTS. ALL SERVICE SADDLES SHALL BE PER APPROVED WATER MATERIALS LIST.
- B. 1" OR 2" CORPORATION STOP PER APPROVED WATER MATERIALS LIST.
- C. 1" OR 2" SERVICE PIPE SHALL BE SEAMLESS 250 PSI BLUE COLORED POLYETHYLENE ASTM D2737, SDR9, CTS WATER SERVICE PIPE, NSF61 APPROVED.
- D. 1" OR 2" LOCKING ANGLE METER VALVE (STOP) PER APPROVED WATER MATERIALS LIST.
- E. WATER METERS CENTERED IN BOX AS ILLUSTRATED.
- F. ROUND METER BOX PER APPROVED WATER MATERIALS LIST.

WATER SERVICE INSTALLATION

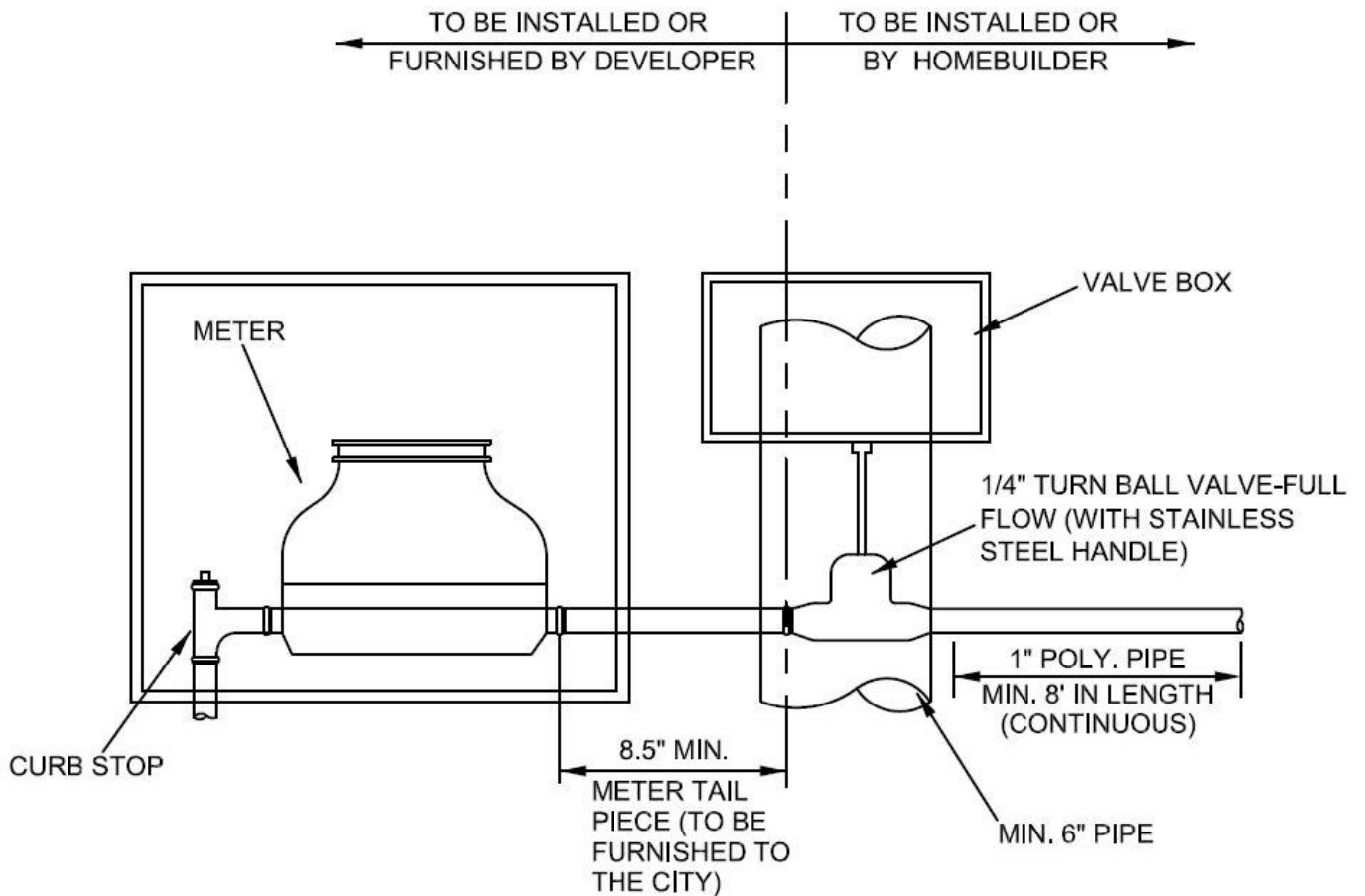
1" OR 2" LINE

CITY OF ROCKWALL



DATE
AUG '19

DRAWING NO.
R-4130



NOTE:

VALVE BOX TO BE TRAFFIC RATED IF UNDER PAVING.

SINGLE SERVICE METER TAIL CONNECTION

NOT TO SCALE

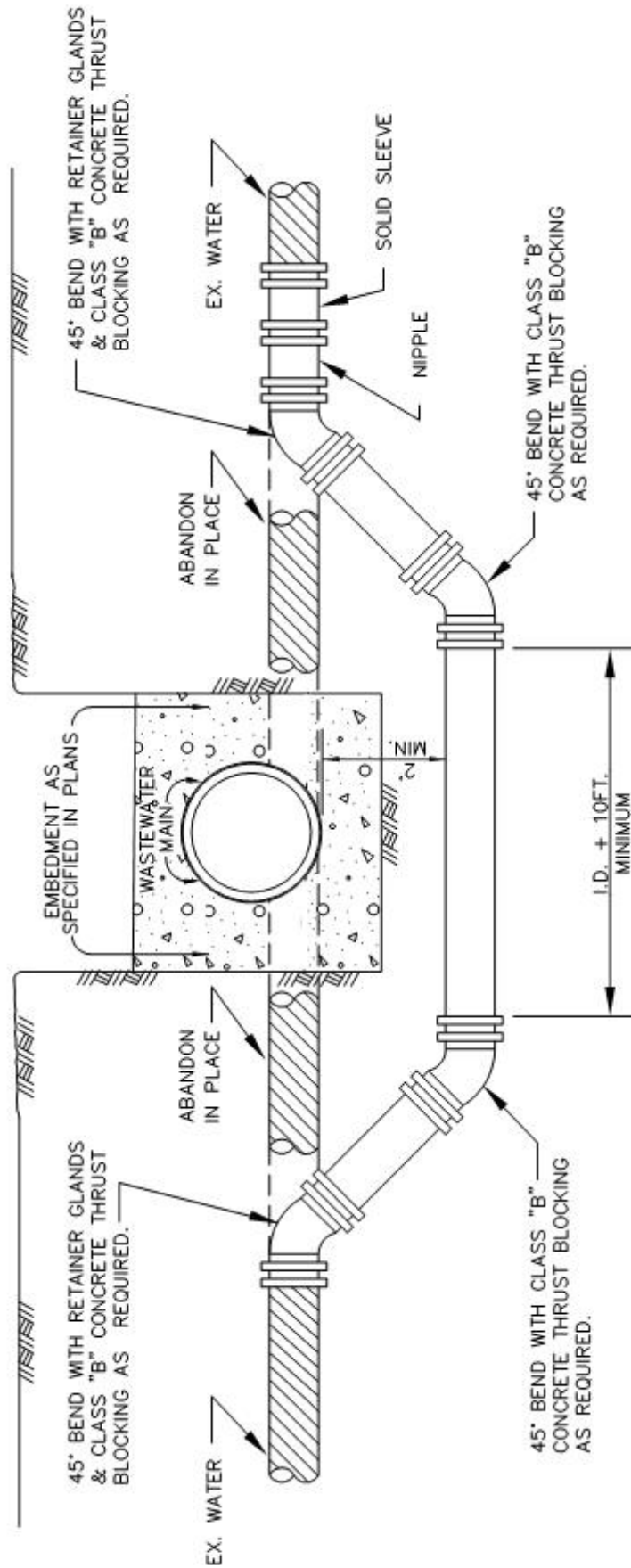
WATER METER DETAIL

SINGLE SERVICE

CITY OF ROCKWALL



DATE AUG. '15	DRAWING NO. R-4145
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CONCRETE ENCASEMENT SHALL
ENCASE ENTIRE WASTEWATER MAIN.
DEFLECT WATER LINE WHEN POSSIBLE.

STANDARD SPECIFICATION REFERENCE		CITY OF ROCKWALL	
506.6			
DATE			
Mar. 2018		STANDARD DRAWING NO.	
R-4200		WATER MAIN LOWERING	
BELOW WASTEWATER MAIN		STANDARD DRAWING NO.	
R-4200			

Division 5000 Wastewater Collection

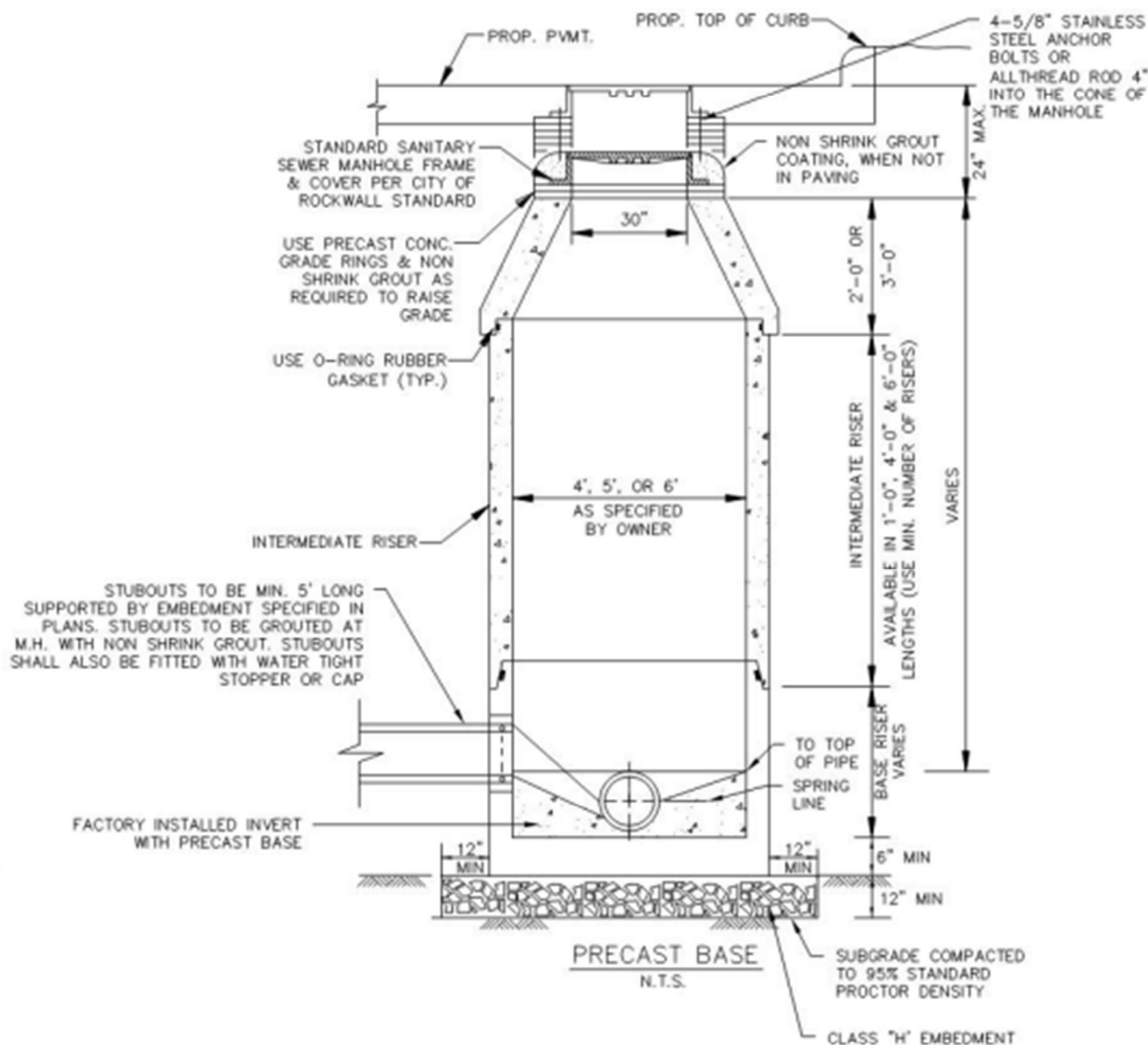
- NOTE:**
- (1) Deleted NCTCOG Drawing
 - (2) Revised NCTGOG Drawing (see revisions below)
 - (3) Added Rockwall Standard Drawing (see drawing below)
 - (4) Added Current TxDOT Standards

Table 9.5: Revisions to NCTCOG's Division 5000 Wastewater Collection

<u>Revised</u>	<u>Drawing No.</u>	<u>Subject</u>
(1)	5020	Wastewater Manhole – Precast
(3)	R-5020	Wastewater Manhole – Precast
(1)	5030	Wastewater Manhole – Cast-In-Place
(3)	R-5030	Wastewater Manhole – Cast-In-Place
(3)	R-5031	Wastewater Manhole – Inflow Prevention & Corrosion Protection
(1)	5080	Wastewater Manhole – Inside Drop Connection
(3)	R-5080	Wastewater Manhole – Inside Drop Connection
	5090	Wastewater Manhole – Line Intersection
	5100	Wastewater Manhole – False Bottom
(3)	R-5101	Wastewater Manhole – Hinged Rim & Cover
(3)	R-5102	Wastewater Manhole – Bolt and Gasket Rim & Cover
(1)	5110	Wastewater Main – Cleanout
(3)	R-5110	Wastewater Main – Cleanout
(1)	5120	Wastewater Laterals – With & Without Cleanout
(3)	R-5120	Wastewater Lateral Connections – Residential
(1)	5130	Wastewater Lateral Connections – In Earth & In Rock
	5140	Wastewater Lateral Connections – Cleanout Frame & Cover
(1)	5150	Wastewater Lateral Stubout – In Advance of Paving
(3)	R-5150	Wastewater Lateral Stubout – In Advance of Paving
(1)	5160	Wastewater Lateral Replacement – In Advance of Paving
(3)	R-5160	Wastewater Lateral Replacement – In Advance of Paving
(1)	5170	Abandonment of Manhole – In or Out of Pavement
(3)	R-5170	Abandonment of Manhole – In or Out of Pavement

NOTES:

1. FIRST MAIN LINE JOINT TO BE A MIN. OF 5' LONG.
2. IF FALSE M.H. ARE REQUIRED, THEY SHALL BE CONSTRUCTED, INSTALLED AND REMOVED PER STD. DWG. NO. 5100.
3. M.H.'S LOCATED OUTSIDE OF PAVING SHALL BE CONSTRUCTED WITH A CONCRETE MOW STRIP PER STD. DWG. NO. R-7005.
4. REFER TO STD. DWG. NO. R-5031 FOR INFLOW PROTECTION AT MANHOLE GRADE RINGS, MANHOLE JOINTS AND ON OUTSIDE OF STRUCTURE.
5. REFER TO STD. DWG. NO. R-5032 FOR CORROSION PROTECTION.
6. CONCRETE SHALL BE 4,200 PSI (7.0 SACK/CY) 28 DAY STRENGTH.
7. REINFORCING SHALL MEET OR EXCEED ASTM C478 REQUIREMENTS.
8. INSTALL GREEN EMS DISK AT ALL MANHOLES.
9. UP TO BE PRECAST.
10. INSTALL A MINIMUM OF FOUR (4) 5/8" STAINLESS STEEL ANCHOR BOLTS OR ALLTHREAD ROD 4" INTO THE CONE OF THE MANHOLE TO HOLD THE RING AND COVER. ALLTHREAD MUST BE EPOXIED IN PLACE.



WASTEWATER MANHOLE

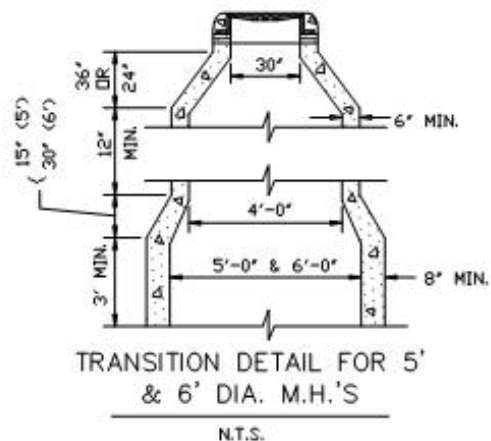
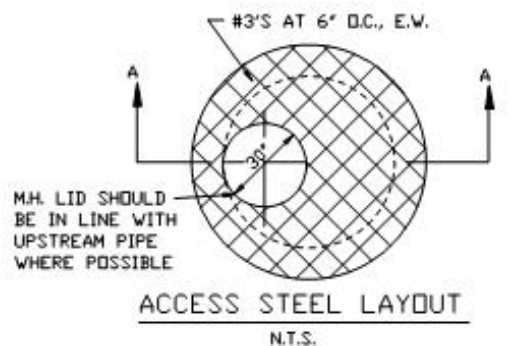
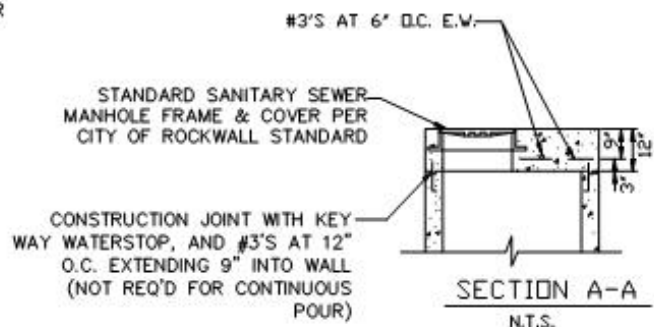
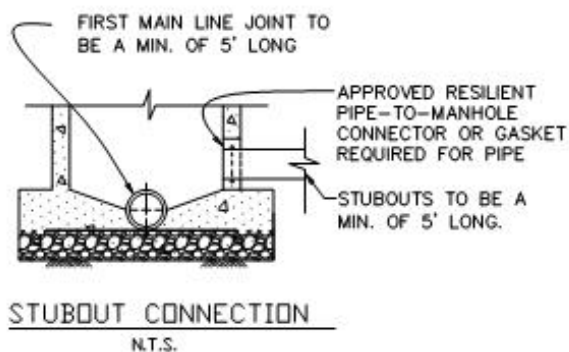
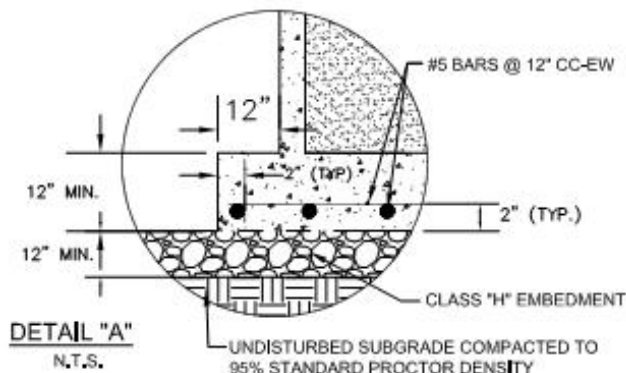
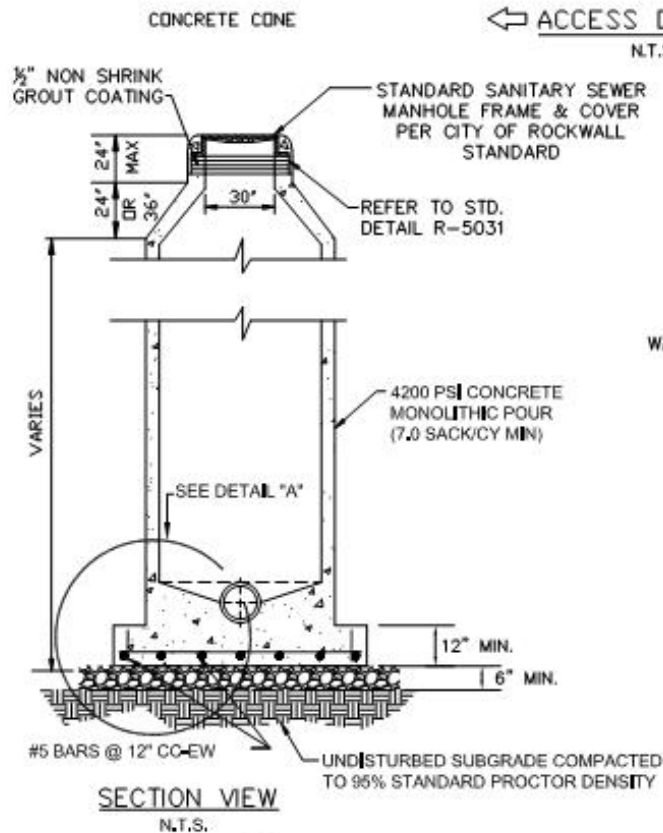
PRECAST

CITY OF ROCKWALL



DATE
DEC '22

DRAWING NO.
R-5020



NOTES:

1. IF FALSE M.H. BOTTOMS ARE REQUIRED THEY SHALL BE CONSTRUCTED, INSTALLED AND REMOVED, PER STD. DWG. NO. 5100
2. M.H.'S LOCATED OUTSIDE OF PAVING SHALL BE CONSTRUCTED WITH A CONCRETE MOW STRIP PER STANDARD DETAIL R-7005.
3. REFER TO STD. DWG. NO. R-5031 FOR INFLOW PROTECTION AT MANHOLE GRADE RINGS AND ON THE OUTSIDE OF MANHOLE STRUCTURE.
4. CAST IN PLACE BASE MUST BE A MINIMUM 12" THICK WITH #5 BARS @ 12" OC-EW (EACH WAY) AND SHALL EXTEND 1' BEYOND MANHOLE.
5. CONCRETE SHALL BE 4,200 PSI (7.0 SACK/CY) 28 DAY STRENGTH.
6. REINFORCING SHALL MEET OR EXCEED ASTM C478 REQUIREMENTS.
7. INSTALL GREEN EMS DISK AT ALL MANHOLES.

WASTEWATER MANHOLE

CAST-IN-PLACE

CITY OF ROCKWALL

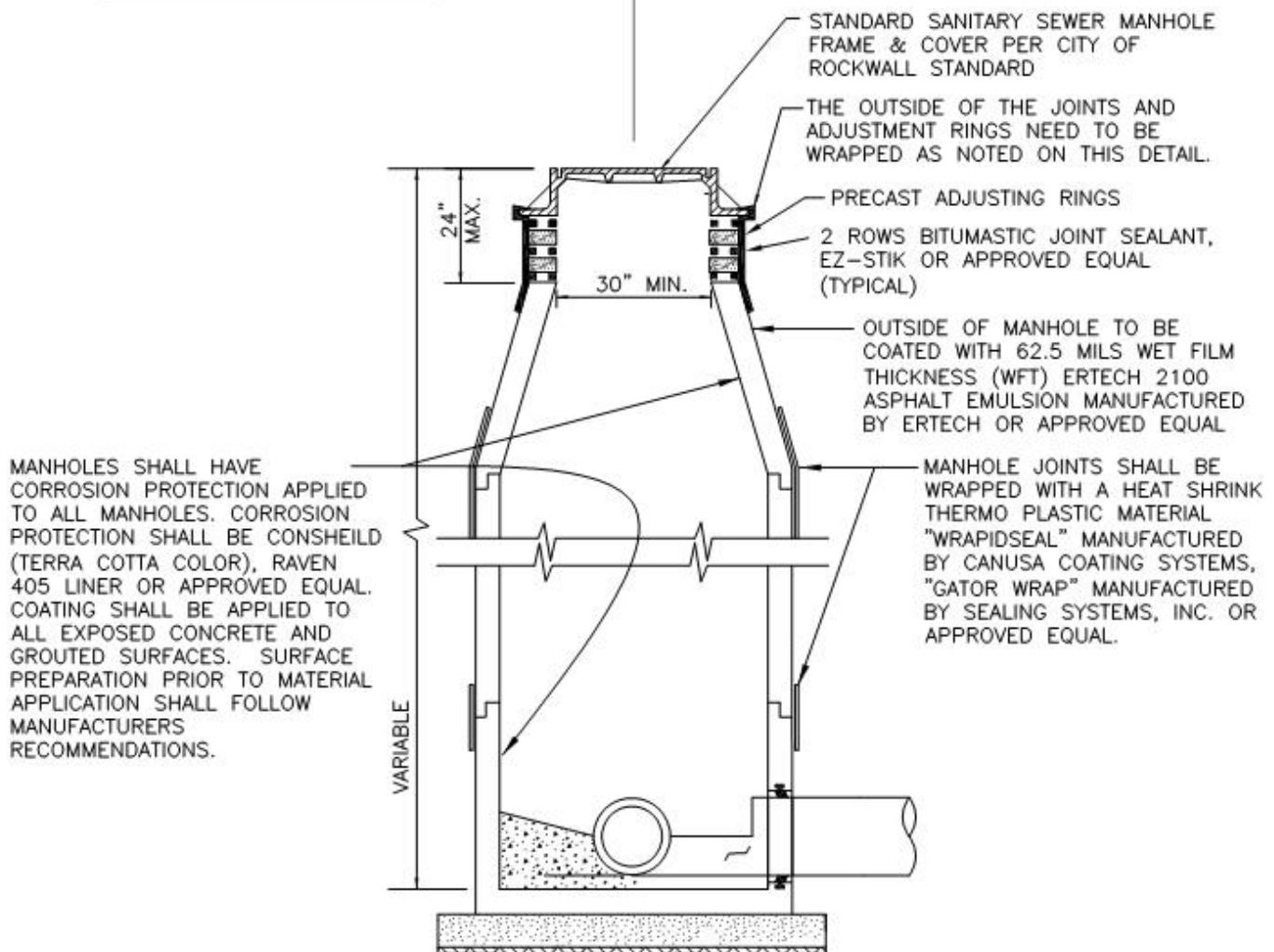


DATE
AUG '19

DRAWING NO.
R-5030

CORROSION PROTECTION ←

→ INFLOW PREVENTION



ELEVATION

N.T.S.

INFLOW PREVENTION NOTES:

1. REQUIRED ON ALL SANITARY SEWER MANHOLES AND LIFT STATION WET WELLS AND VALVE VAULTS.

CORROSION PREVENTION NOTES:

1. TO CORROSION PROTECTIVE COATING PROCESS, PRESSURE WASH AND CLEAN STRUCTURE. FILL BUG HOLES, JOINTS, HONEYCOMBS AND AROUND PIPE PENETRATIONS WITH A CEMENTITIOUS REPAIR MATERIAL (CRM) AS NEEDED. USE STRONG SEAL MS2C MANUFACTURED BY THE STRONG COMPANY, INC. OR APPROVED EQUAL. THEN APPLY A MINIMUM OF 125 MILS ($\frac{1}{8}$ INCH) THICKNESS OF A POLYURETHANE COATING MATERIAL (EXISTING MANHOLES REQUIRE A MINIMUM OF 250 MILS THICKNESS OF POLYURETANE COATING MATERIAL). FOR THE POLYURETHANE COATING MATERIAL USE RAVEN 405 LINER OR APPROVED EQUAL.
2. ADDITIONAL CLEANING, PREPARATION, AND REPAIR METHODS MAY BE REQUIRED FOR EXISTING MANHOLES DEPENDING ON CONDITION ASSESSMENT OF THE MANHOLE. CONTACT ENGINEERING DIVISION FOR ADDITIONAL SPECIFICATIONS.
3. SPARK TESTING IS REQUIRED FOR COATINGS. COST FOR TESTING IS SUBSIDIARY TO OTHER BID ITEMS. CITY INSPECTOR TO BE PRESENT FOR SPARK TESTING. CONTRACTOR TO PROVIDE WRITTEN SPARK TEST RESULTS TO CITY.
4. EXISTING BRICK MANHOLES SHALL BE REPLACED.
5. REQUIRED ON ALL WASTEWATER MANHOLES AND LIFT STATION WET WELLS.

WASTEWATER MANHOLE

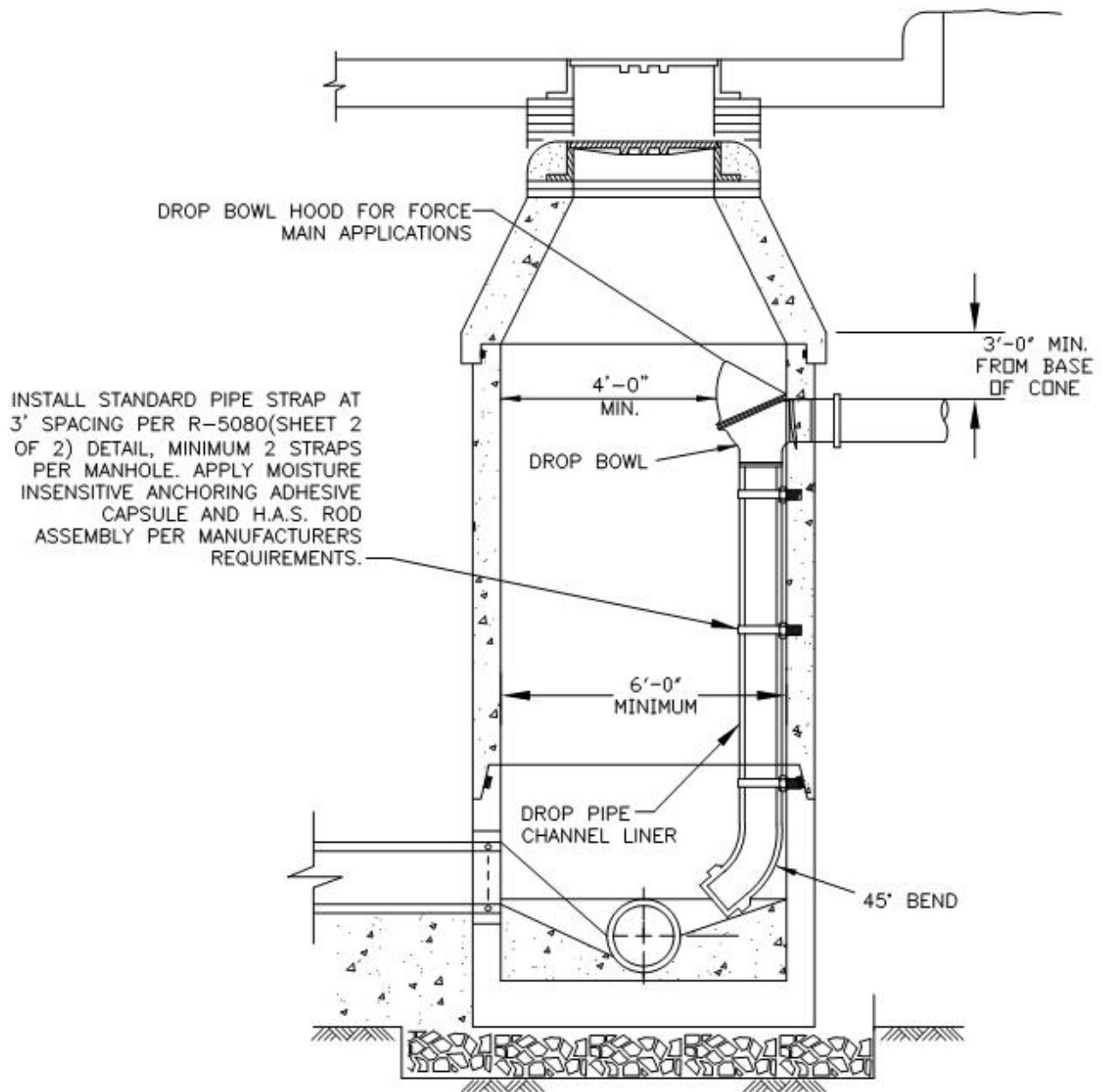
CITY OF ROCKWALL



INFLOW PREVENTION & CORROSION PROTECTION

DATE
AUG '19

DRAWING NO.
R-5031



ELEVATION
N.T.S.

NOTE:

1. DROP BOWL, DROP PIPE CHANNEL LINER AND STAINLESS STEEL PIPE CLAMPS AS MANUFACTURED BY RELINER/DURAN INC. OR APPROVED EQUAL.

SHEET 1 OF 2

WASTEWATER MANHOLE

DROP CONNECTIONS

CITY OF ROCKWALL



DATE
AUG '19

DRAWING NO.
R-5080

HVA ADHESIVE CAPSULE ANCHOR

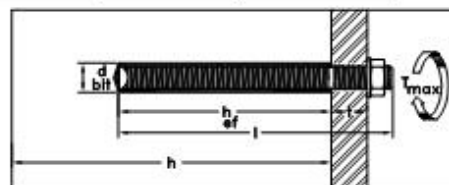
- A. DRILL HOLES WITH ANSI B212.15 MATCHED TOLERANCE CARBIDE TIPPED DRILL BITS WITH DRILL IN ROTO-HAMMER MODE OR USE A MATCHED TOLERANCE DIAMOND CORE DRILL BIT OF DIAMETER SPECIFIED BY HILTI.
- B. DRILLED HOLE SPECIFICATIONS (DIAMETER & DEPTH) SHALL COMPLY WITH HILTI SPECIFICATION OR ICC ESR 1582.
- C. ALLOWABLE LOADS MAY BE INCREASED BY 33-1/3% FOR SHORT-TERM WIND OR SEISMIC LOAD RESISTANCE IAW ICC ESR 1682 UNLESS NOT PERMITTED BY THE APPLICABLE BUILDING CODE.
- D. WHEN CONDUCTED, PROOF TEST ANCHORS IN THE FIELD TO 150-200% OF HILTI PUBLISHED ALLOWABLE TENSION LOAD UNLESS NOTED OTHERWISE IN A PROOF TEST LOAD TABLE. TORQUE TESTING IS NOT PERMITTED.
- E. ANCHORS SHALL BE TIGHTENED WITH A CALIBRATED TORQUE WRENCH. USE OF AN IMPACT WRENCH IS NOT PERMITTED.
- F. CONTACT HILTI TECHNICAL SUPPORT AT 1-800-879-8000 FOR INSTALLATION INSTRUCTIONS IN SUBMERGED WATER CONDITIONS.
- G. CONTACT HILTI TECHNICAL SUPPORT AT 1-800-879-8000 FOR ADDITIONAL ASSISTANCE WITH HVA ADHESIVE ANCHOR INSTALLATIONS.
- H. **INSTALLATION INSTRUCTIONS:**
 - H.1. FOR HVA ADHESIVE CAPSULES WITH H.A.S. THREADED RODS:
 1. DRILL ANCHOR HOLE WITH A CARBIDE BIT (SEE NOTE 1 ABOVE), TO SPECIFIED EMBEDMENT DEPTH.
 2. CLEAN HOLE WITH COMPRESSED AIR OR BLOW OUT PUMP. INSERT NOZZLE TO BOTTOM OF HOLE.
 3. IF USING MATCHED TOLERANCE CORE BIT, REMOVE STANDING WATER FROM HOLE.
 4. INSERT APPROPRIATE HVU CAPSULE INTO HOLE WITH POINTED END FIRST. CAPSULE LENGTH IS LONGER THAN STANDARD EMBEDMENT AND WILL PROTRUDE FROM HOLE. DO NOT CUT OFF ANY PART OF THE HVU CAPSULE.
 5. THREAD NUT ONTO ROD.
 6. PLACE A WASHER ON FIRST NUT AND THREAD BLACK SETTING NUT DOWN ON WASHER.
 7. TIGHTEN NUTS TOGETHER SO THAT BLACK SETTING WASHER IS AT TOP OF ROD.
 8. INSERT SQUARE DRIVE SHAFT INTO HAMMER DRILL AND ATTACH PROPER IMPACT SOCKET.
 9. WITH HAMMER DRILL ON ROTARY HAMMER, ENGAGE TOP NUT OF HAS ROD ASSEMBLY AND ROTOHAMMER ROD THROUGH CAPSULE(S) INTO THE HOLE. STOP DRILL ROTATION IMMEDIATELY UPON REACHING BOTTOM OF HOLE.
 10. DO NOT DISTURB OR LOAD ANCHOR BEFORE CURING TIME ELAPSES.

HVA INSTALLATION SPECIFICATION TABLE FOR H.A.S. RODS

DETAILS	HAS Rod Size	1/4"	3/8"	1/2"	5/8"	3/4"	7/8"	1"	1-1/4"
d : nominal bit diameter	d	15/32	9/16	11/16	7/8	1	1-1/8	1-3/8	
h : std. depth of embed. h_{nom} : capsule length	h	3-1/2	4-1/4	5	6-5/8	6-5/8	8-1/4	12	
t : max. thickness fastened	t	1	1-1/2	1-3/4	2	2-1/4	2-1/2	2-3/4	
T : max. tightening torque	All Hilti Rods	18	30	75	150	175	235	400	
h : minimum base material thickness	$h_{ef} = h_{nom}$	5-1/4	6-3/8	7-1/2	10	10	12-3/8	18	
	$h_{ef} = h_{nom}$	1,0h + ef 2	1,0h + ef 2	1,0h + ef 2	1,0h + ef 2	1,0h + ef 2	1,0h + ef 2 1/4	1,0h + ef 3	
Recommended Hilti Rotary Hammer Dr		TE-5, 15, 18M, 25	TE-18M, 25, 55, 76		TE-55, 76		TE-76		

For S_b 1 Inch - 25,4mm, 18lb - 1,4 Nm
Curing Time Table (Approximate)

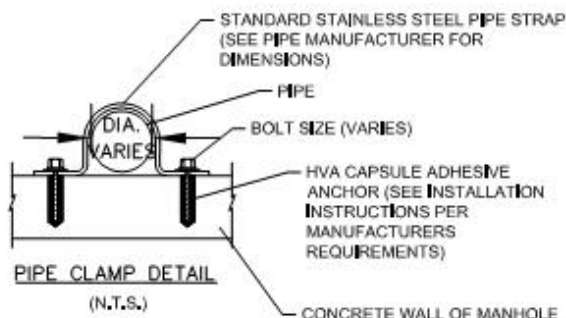
Approx. Curing Time	Base Material Temperature
20 Minutes	ABOVE 68° F/20° C
30 Minutes	50° F/10° C
1 Hour	32° F/0° C
5 Hour	23° F/-5° C



HILTI HVA ADHESIVE CAPSULE ANCHOR
OR APPROVED EQUAL

INSTALLATION INSTRUCTIONS:

1. SET THE DRILL DEPTH GAUGE AND DRILL A HOLE TO THE REQUIRED HOLE DEPTH. IMPORTANT: CLEAN OUT DUST AND DEBRIS. USE COMPRESSED AIR OR VACUUM AT BOTTOM OF THE HOLE. WHEN USING THE HILTI MATCHED TOLERANCE DIAMOND CORE BIT, IMMEDIATELY REMOVE STANDING WATER.
2. INSERT APPROPRIATE DIAMETER HVU ADHESIVE CAPSULE INTO PRE-DRILLED HOLE IN BASE MATERIAL. NOTE: THE BEST METHOD FOR SETTING MULTIPLE CAPSULES IS TO CRUSH THE FIRST CAPSULE(S) INTO THE HOLE AND THEN INSERT THE NEXT CAPSULE. DO NOT CUT OFF CAPSULES PARTIALLY PROTRUDING FROM THE HOLE.
3. CAPSULE LENGTH IS LONGER THAN STANDARD EMBED, DEPTH AND WILL PROTRUDE FROM THE HOLE.
4. THREAD A H.A.S. NUT ON THE H.A.S. ROD. PLACE A WASHER ON TOP OF THE FIRST NUT AND THEN THREAD A BLACK SETTING NUT DOWN ON TOP OF THE WASHER. TIGHTEN THE TWO NUTS TOGETHER "LOCKING" THE WASHER BETWEEN THEM. THE TOP NUT SHOULD BE FLUSH WITH THE TOP OF THE ROD.
5. INSERT A SQUARE DRIVE SHAFT INTO THE HAMMER DRILL AND ATTACH THE PROPER IMPACT SOCKET. AT THE ROTARY HAMMER DRILL SETTING, ENGAGE THE TOP NUT OF THE HAS ROD ASSEMBLY WITH THE SOCKET AND DRIVE THE ROD DOWN THROUGH THE CAPSULE(S). STOP DRILL ROTATION IMMEDIATELY UPON REACHING BOTTOM OF HOLE.
6. DO NOT DISTURB OR LOAD THE SET ANCHOR BEFORE THE SPECIFIED CURING TIME ELAPSES.



DROP FIXTURE ANCHOR
(N.T.S.)

SHEET 2 OF 2

WASTEWATER MANHOLE

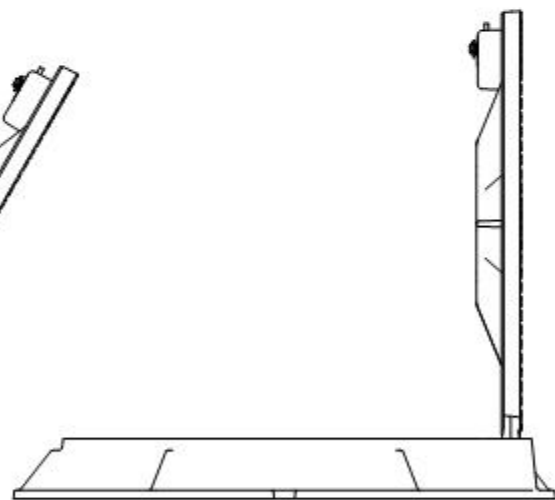
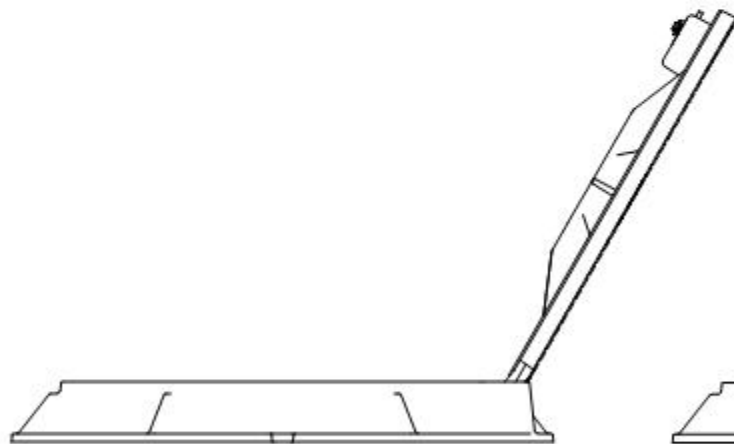
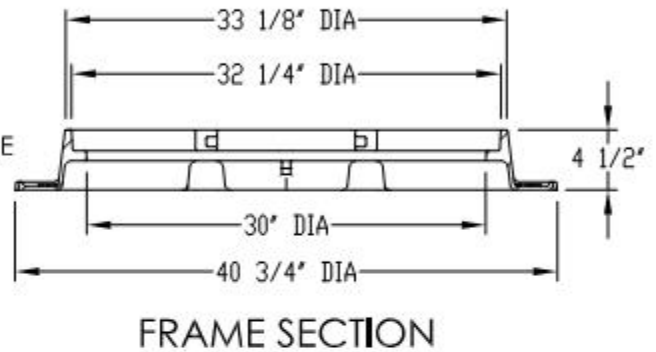
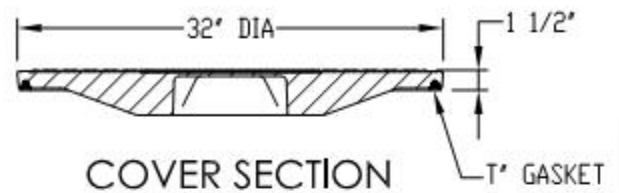
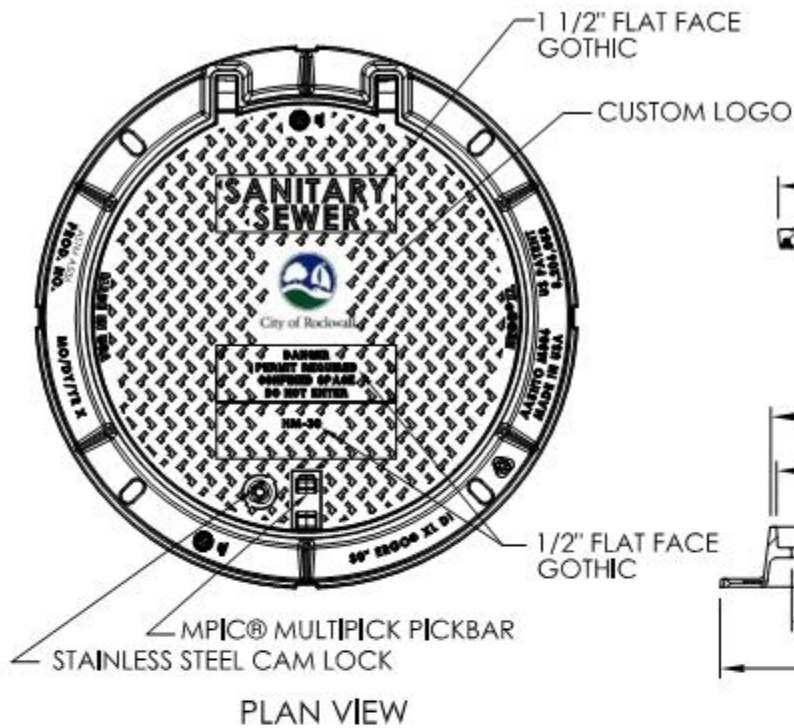
DROP CONNECTIONS

CITY OF ROCKWALL



DATE
AUG '19

DRAWING NO.
R-5080



WASTEWATER MANHOLE

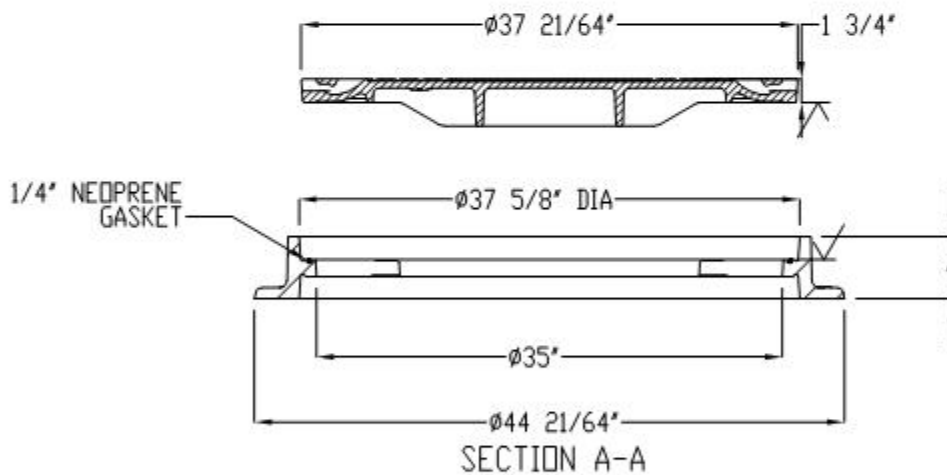
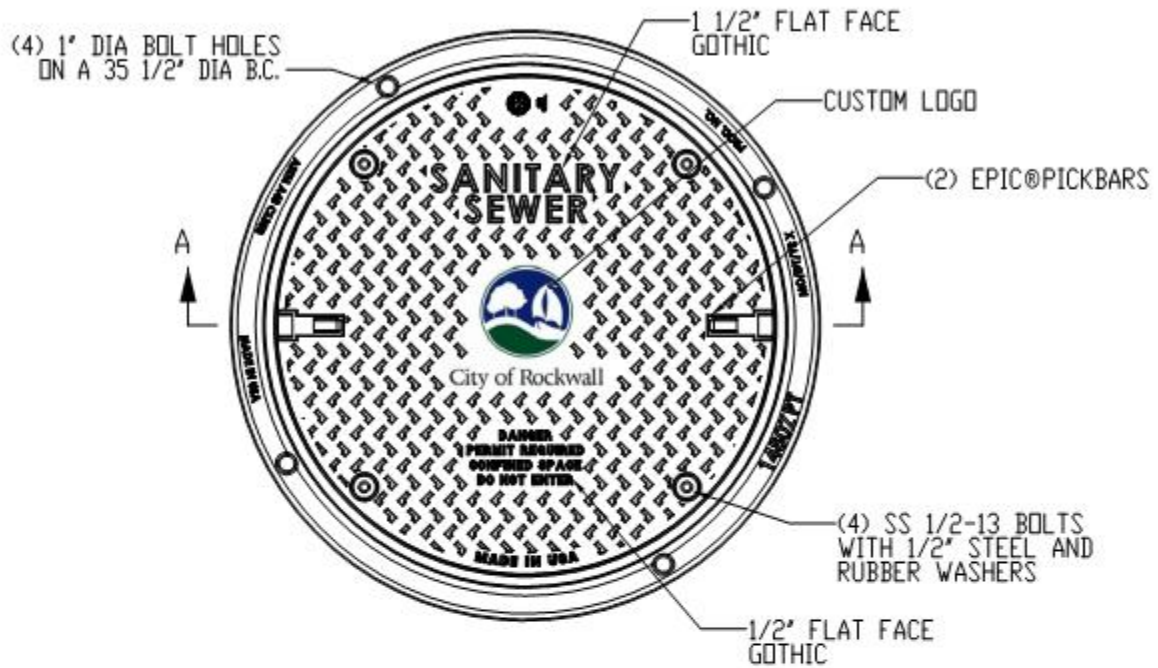
HINGED RIM AND COVER

CITY OF ROCKWALL



DATE
AUG '19

DRAWING NO.
R-5101



WASTEWATER MANHOLE

BOLT AND GASKET RIM AND COVER

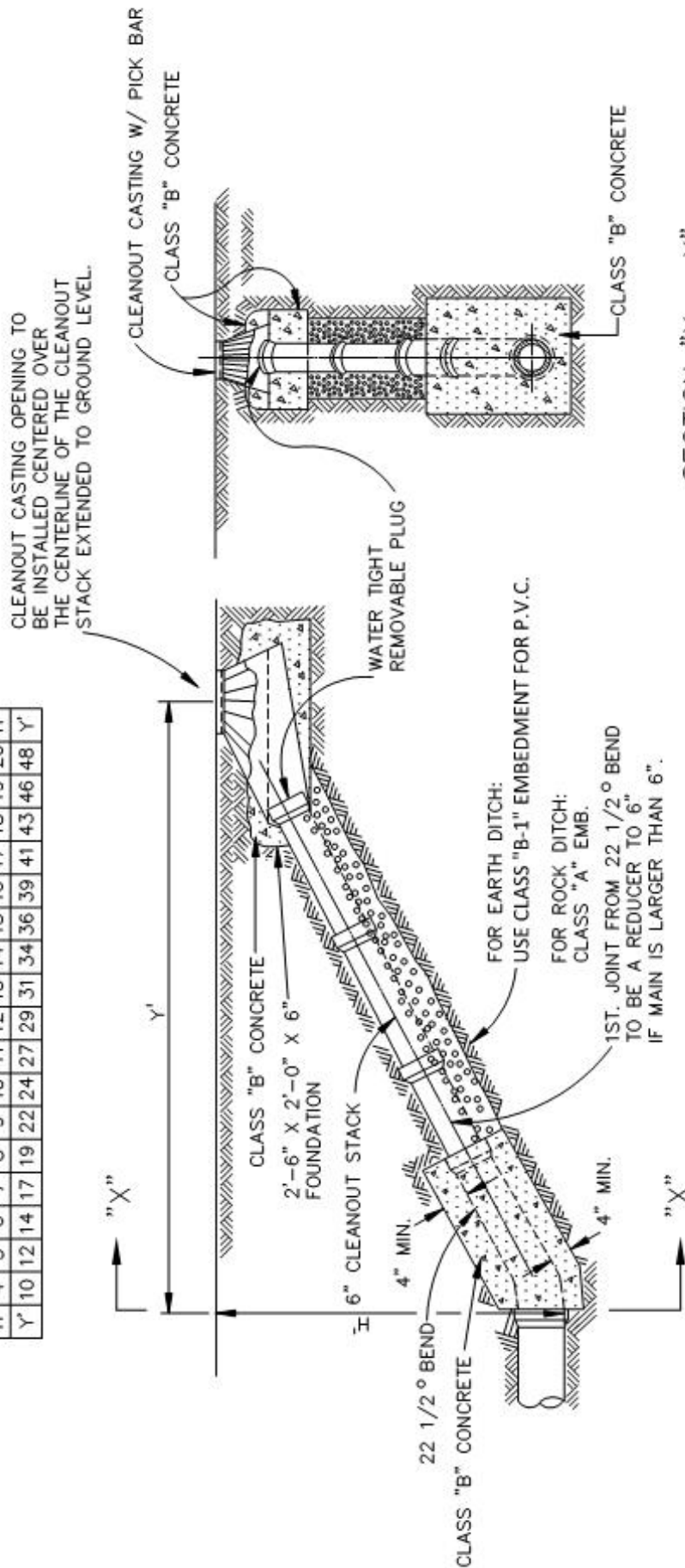
CITY OF ROCKWALL



DATE
AUG '19

DRAWING NO.
R-5102

H'	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	H'
Y'	10	12	14	17	19	22	24	27	29	31	34	36	39	41	43	46	48	Y'



- NOTES:
1. IF CLEANOUT IS PLACED IN ADVANCE OF PAVEMENT PLACE SAND AROUND CLEANOUT CASTING IN LIEU OF CLASS "B" CONCRETE.
 2. IF CLEANOUT IS OUTSIDE OF PAVEMENT, CENTER CASTING IN 15"x15" CLASS "A" CONCRETE PAD 4" THICK.

PROFILE VIEW

N.T.S.

WASTEWATER MAIN

CLEANOUT

CITY OF ROCKWALL



STANDARD SPECIFICATION REFERENCE

502.2

DATE

Mar. 2018

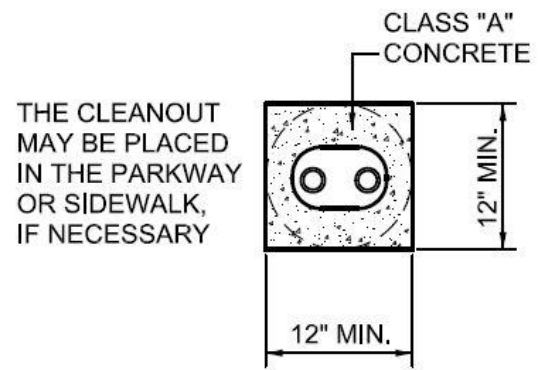
STANDARD DRAWING NO.

R-5110

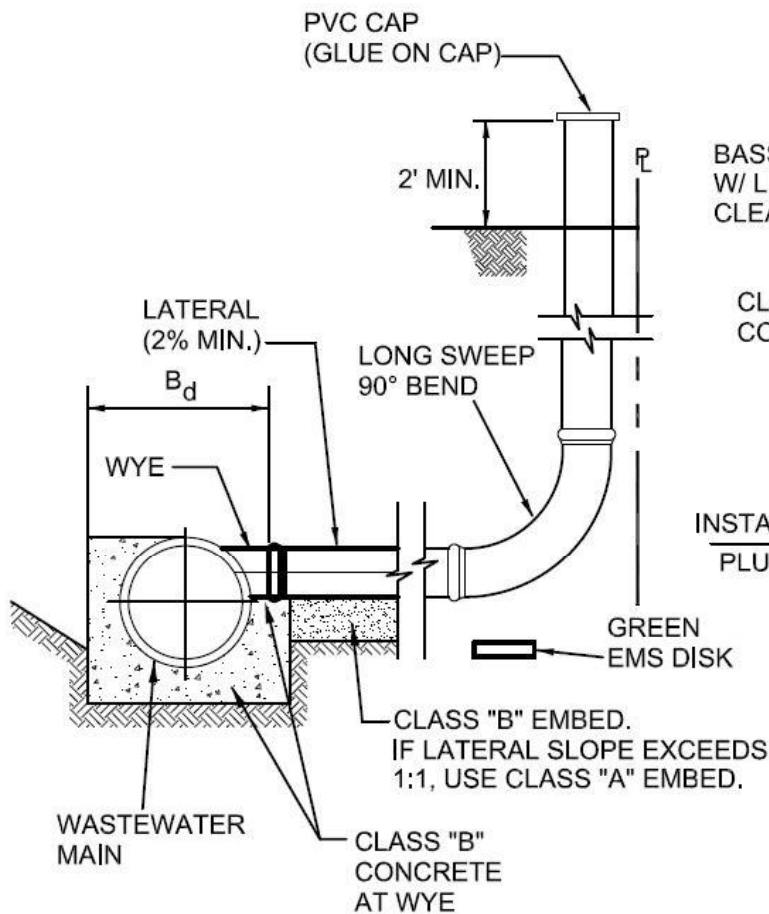
STANDARD DRAWING NO.

R-5110

CLASS CONCRETE	BAGS CEMENT PER C.Y.	MIN. STRENGTH 28 - DAY PSI
A	5.5	3000
B	4	2000



TOP VIEW OF CLEANOUT



BASS & HAYS 404
W/ LID & GASKET
CLEANOUT

CLASS "A"
CONCRETE

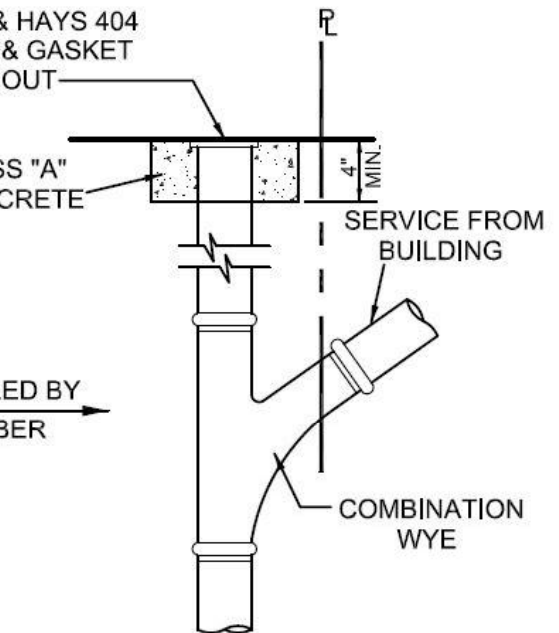
INSTALLED BY
PLUMBER

GREEN
EMS DISK

CLASS "B" EMBED.
IF LATERAL SLOPE EXCEEDS
1:1, USE CLASS "A" EMBED.

CLASS "B"
CONCRETE
AT WYE

WASTEWATER
MAIN



PLUMBER TO CUT CLEANOUT RISER TO
INSTALL COMBINATION WYE TO
CORRESPOND W/ GRADE OF THE PIPE
LEADING FROM BUILDING. AFTER
INSTALLATION OF THE WYE, INSERT
CLEANOUT INTO THE TOP OF THE
RISOR.

WASTEWATER LATERAL

CONNECTIONS – RESIDENTIAL

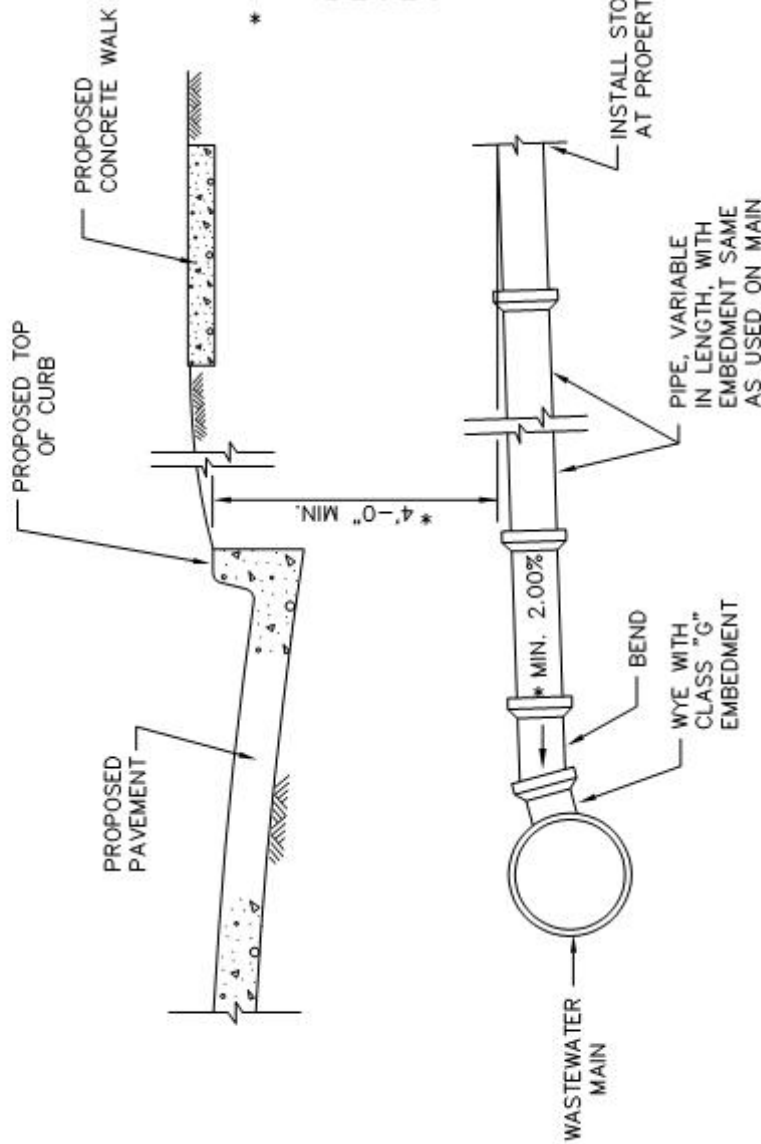
CITY OF ROCKWALL



DATE
AUG. '15

DRAWING NO.
R-5120

INSTALL GREEN
EMS DISKS AT
END OF LATERAL.



* WASTEWATER LATERALS ARE TO BE CONSTRUCTED TO CLEAR EXISTING AND PROPOSED FACILITIES, SUCH AS STORM SEWER MAINS, RETAINING WALLS, OTHER UTILITIES, ETC. THE WASTEWATER LATERAL SHALL HAVE A MINIMUM COVER OF 4'-0" BELOW THE PROPOSED CURB GRADE AT THE PROPERTY LINE, DETERMINED FROM PAVING GRADE, OR AS REQUIRED TO MAINTAIN A MINIMUM OF 2.00% GRADE, OR AS DIRECTED BY THE OWNER.

WASTEWATER LATERAL STUBOUT (FOR FUTURE CONNECTION, 4" OR 6" AS SPECIFIED) N.T.S.

STANDARD DRAWING NO.
R-5150

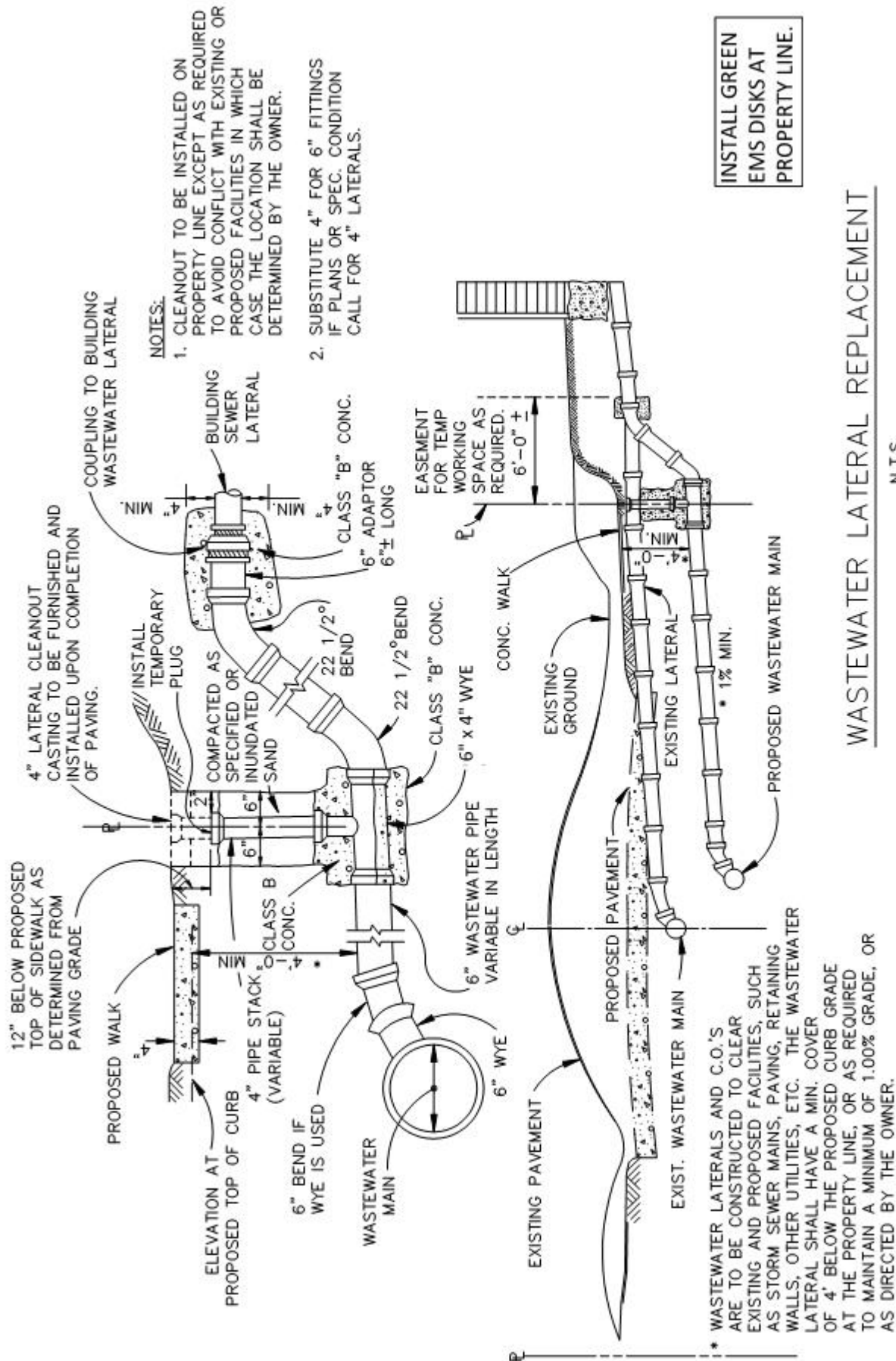
WASTEWATER LATERAL STUBOUT
IN ADVANCE OF PAVING

CITY OF ROCKWALL



STANDARD SPECIFICATION REFERENCE
502.10

DATE
Mar. 2018
STANDARD DRAWING NO.
R-5150



N.T.S.

WASTEWATER LATERAL REPLACEMENT

STANDARD DRAWING NO
R-5160

WASTEWATER LATERAL REPLACEMENT
IN ADVANCE OF PAVING

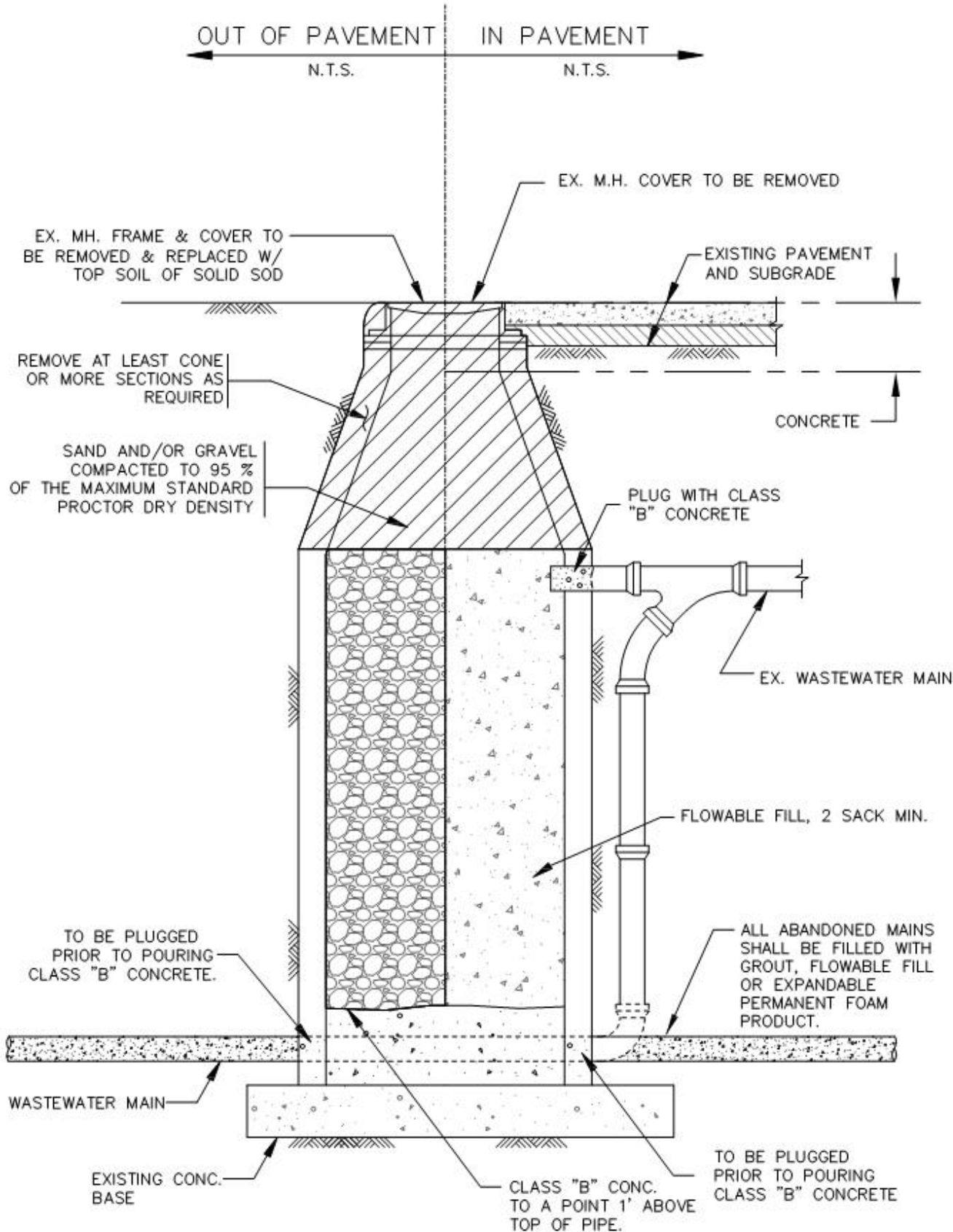


CITY OF ROCKWALL

STANDARD SPECIFICATION REFERENCE
502.10

DATE
Mar. 2018

STANDARD DRAWING NO
R-5160



ABANDONMENT OF MANHOLE

CITY OF ROCKWALL



INSIDE AND OUTSIDE OF PAVEMENT

DATE
AUG '19

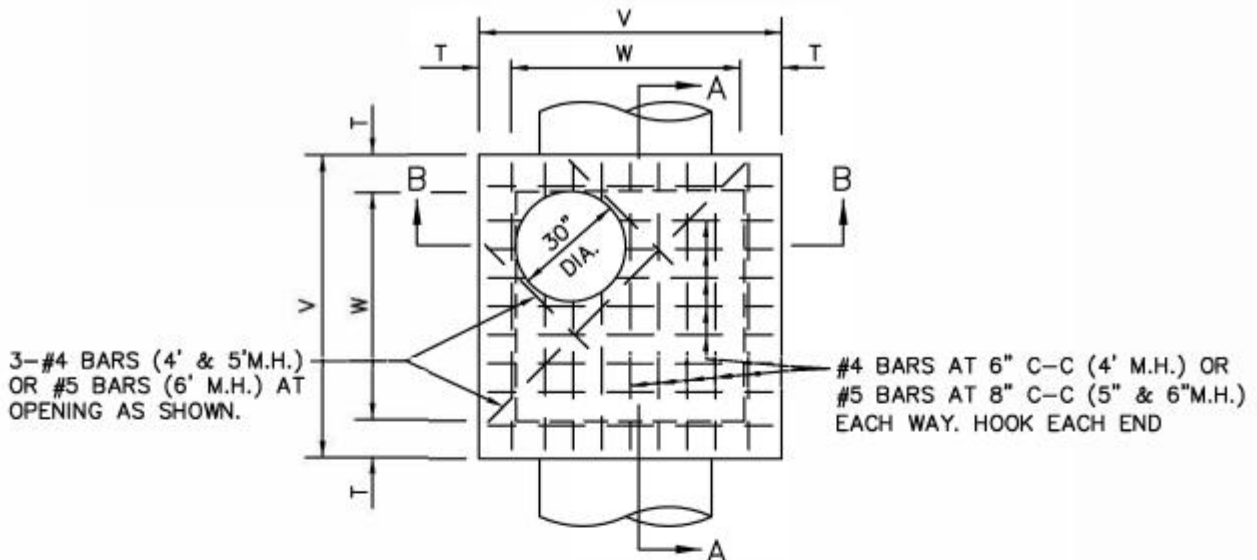
DRAWING NO.
R-5170

Division 6000 Storm Water Drainage

- NOTE:**
- (1) Deleted NCTCOG Drawing
 - (2) Revised NCTGOG Drawing (see revisions below)
 - (3) Added Rockwall Standard Drawing (see drawing below)
 - (4) Added Current TxDOT Standards

Table 9.6: Revisions to NCTCOG's Division 6000 Storm Water Drainage

<u>Revised</u>	<u>Drawing No.</u>	<u>Subject</u>
(1)	6010A	Storm Water Manhole — 4', 5', 6' Square
(3)	R-6010A	Storm Water Manhole – 4', 5', 6' Square
(1)	6010B	Storm Water Manhole — 4', 5', 6' Square
(3)	R-6010B	Storm Water Manhole – 4', 5', 6' Square
(1)	6020A	Curb Inlet — 5', 10' 15' or 20' Opening
(3)	R-6020A	Curb Inlet – 5', 10' 15' or 20' Opening
(1)	6020B	Curb Inlet — Cross Section & Inlet Throat
(3)	R-6020B	Curb Inlet – Cross Section & Inlet Throat
(1)	6020C	Curb Inlet — Rebar & M.H. Frame & Cover
(3)	R-6020C	Curb Inlet – Rebar & M.H. Frame & Cover
(1)	6020D	Curb Inlet — Bill of Reinforcing Steel
(3)	R-6020D	Curb Inlet – Bill of Reinforcing Steel
(1)	6020E	Curb Inlet — Summary of Quantities
(3)	R-6020E	Curb Inlet – Summary of Quantities
(3)	R-6022	Alley Curb Inlet – Under Paving – 5', 10', 15' or 20' Opening
(3)	R-6025A	Curb Inlet Under Pavement – 5', 10', 15' or 20' Opening
(3)	R-6025B	Curb Inlet Under Pavement – Cross Section & Center Beam
(3)	R-6025C	Curb Inlet Under Pavement – Inlet Throat & M.H. Frame & Cover
(3)	R-6025D	Curb Inlet Under Pavement – General Notes



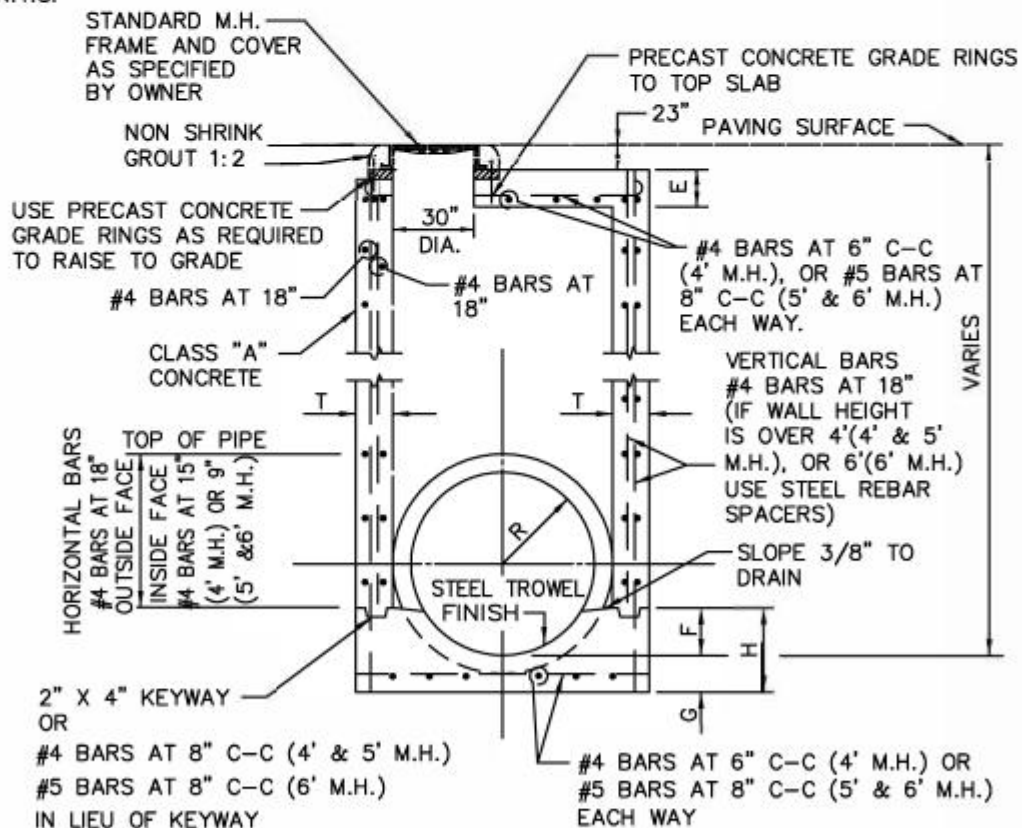
M.H. SIZE(W)	V	T	E	F	G	H
4'	5'-4"	8"	6"	9"	6"	1'-3"
5'	6'-4"	8"	6"	12"	8"	1'-8"
6'	7'-6"	9"	9"	16"	10"	2'-2"

TABLE OF DIMENSIONS

N.T.S.

PLAN
N.T.S.

ALL CONCRETE STRUCTURES SHALL BE CLASS F (4200psi, MIN. 7.0 SACK CEMENT). NO FLY ASH IS ALLOWED IN CONCRETE STRUCTURES.



SECTION B-B

N.T.S.

STORM WATER MANHOLE

4', 5', OR 6' SQUARE

CITY OF ROCKWALL



STANDARD SPECIFICATION REFERENCE
502.1.4.1*

DATE
Mar. 2018

STANDARD DRAWING NO.
R-6010A

#4 BARS AT 6" C-C (4' M.H.), OR
#5 BARS AT 8" C-C (5' & 6' M.H.)
EACH WAY HOOKED
EACH END

#4 BARS
AT 18"
OUTSIDE FACE

#4 BARS
AT 18" INSIDE FACE

#4 BARS
AT 18"
OUTSIDE FACE

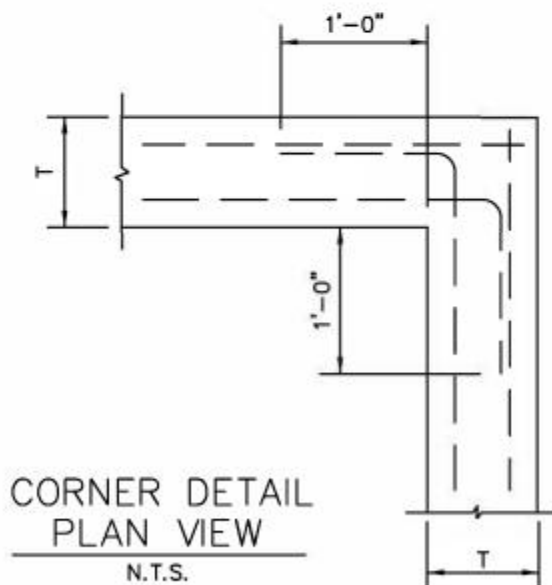
#4 BARS AT 15"
(4' M.H.) OR 9" (5'
& 6' M.H.) INSIDE FACE.

#4 DOWELS AT 18"
ALL AROUND EXCEPT
IN WAY OF PIPE

#4 BARS AT 6" C-C
(4' M.H.), OR #5 BARS AT
8" C-C (5' & 6' M.H.)
EACH WAY

5" MIN.

SECTION A-A N.T.S.



NOTES:

1. SLOPE INVERT OF MANHOLE AS INDICATED ON PLAN-PROFILE SHEET.
2. LAYERS OF REINFORCING STEEL NEAREST THE INTERIOR AND EXTERIOR SURFACE SHALL HAVE A COVER OF 2" TO THE CENTER OF BARS, UNLESS OTHERWISE NOTED.
3. ALL CONCRETE STRUCTURES SHALL BE CLASS F (4200psi, MIN. 7.0 SACK CEMENT).
4. NO FLY ASH IS ALLOWED IN CONCRETE STRUCTURES.

STORM WATER MANHOLE
4', 5', OR 6' SQUARE

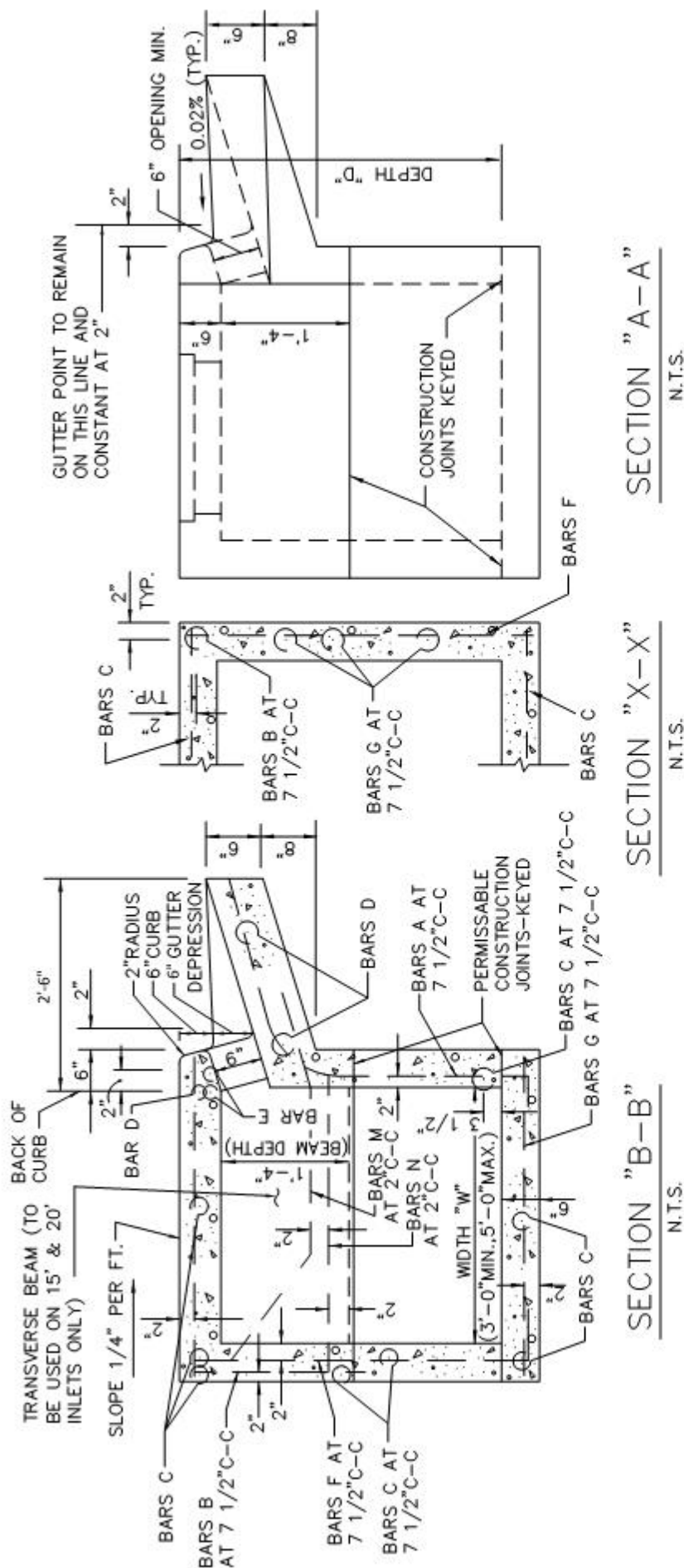
CITY OF ROCKWALL



STANDARD SPECIFICATION REFERENCE
502.1.4.1*

DATE
Mar. 2018

STANDARD DRAWING NO.
R-6010B



GENERAL NOTES:

1. ALL CONCRETE SHALL BE CLASS "A" CONCRETE.
2. REINFORCING BARS SHALL BE STANDARD GRADE STEEL, DEFORMED REINFORCING BARS OF A DIAMETER AND LENGTH AS SHOWN.
3. CHAMFER ALL EXPOSED CORNERS 3/4" EXCEPT WHERE OTHERWISE NOTED.
4. DIMENSIONS RELATING TO REINFORCING STEEL ARE TO CENTERS OF BARS.
5. FIELD CUT AND BEND BARS AS NECESSARY TO ACCOMMODATE STORM SEWER PIPE.
6. RING AND COVER SHALL BE APPROVED BY THE OWNER AND INSTALLED BY THE CONTRACTOR.

ALL CONCRETE STRUCTURES SHALL BE CLASS F (4200psi, MIN. 7.0 SACK CEMENT). NO FLY ASH IS ALLOWED IN CONCRETE STRUCTURES. NO EARTH WALL FORMS, DOUBLE WALL FORMS TO BE USED.

SECTION "A-A"
N.T.S.

SECTION "X-X"
N.T.S.

SECTION "B-B"
N.T.S.

STANDARD DRAWING NO.
R-6020B

CURB INLET
CROSS SECTION & INLET THROAT

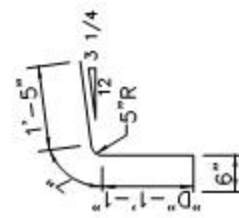
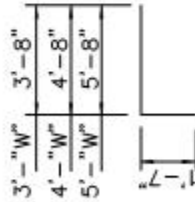
CITY OF ROCKWALL



STANDARD SPECIFICATION REFERENCE
702

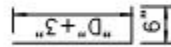
DATE
AUG. 2019

STANDARD DRAWING NO.
R-6020B



#4 BARS B
N.T.S.

#4 BARS A
N.T.S.



#4 BARS F
N.T.S.

LENGTH OF OPENING + 0'-8"

#4 BARS E
N.T.S.



#4 BARS J
N.T.S.



#3 BARS M
N.T.S.

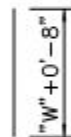
BARS C LGTH. OPEN. + 0'-8"
BARS D LGTH. OPEN. + 11'-8"

#4 BARS C & D
N.T.S.

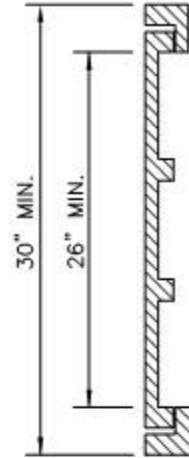
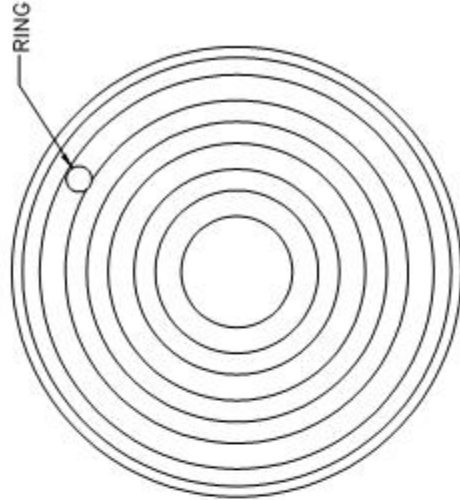


#4 BARS G
N.T.S.

ALL CONCRETE STRUCTURES
SHALL BE CLASS F (4200psi,
MIN. 7.0 SACK CEMENT).
NO FLY ASH IS ALLOWED IN
CONCRETE STRUCTURES.
INLET LID TO BE LOCKING.



#5 BARS N
N.T.S.



CAST IRON
FRAME AND COVER

N.T.S.

STANDARD DRAWING NO.
6020C

CURB INLET
REBAR & M.H. FRAME & COVER



CITY OF ROCKWALL

STANDARD SPECIFICATION REFERENCE
702

DATE
Mar. 2018
STANDARD DRAWING NO.
R-6020C

BILL OF REINFORCING STEEL

DEPTH "D"	ALL WIDTHS AND LENGTHS		OPENING LENGTH "L" = 5 ft				OPENING LENGTH "L" = 10 ft				OPENING LENGTH "L" = 15 ft				OPENING LENGTH "L" = 20 ft																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
			Widths "W"		3 ft	4 ft	5 ft	Widths "W"		3 ft	4 ft	5 ft	Widths "W"		3 ft	4 ft	5 ft																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR	BAR

ALL CONCRETE STRUCTURES SHALL BE CLASS F (4200psi, MIN. 7.0 SACK CEMENT). NO FLY ASH IS ALLOWED IN CONCRETE STRUCTURES.

NOTE:
FOR CONVENIENCE, DEPTHS OF INLETS SHOWN IN ABOVE TABLES ARE IN INCREMENTS OF 3 INCHES BUT ANY DEPTHS OTHER THAN THOSE SHOWN ABOVE MAY BE USED WHEREVER DEEMED NECESSARY. QUANTITIES FOR OTHER DEPTHS FALLING WITHIN THE LIMITS OF THE TABLE MAY BE FOUND BY INTERPOLATION.

STANDARD DRAWING NO.
R-6020D

CITY OF ROCKWALL

CURB INLET

BILL OF REINFORCING STEEL

STANDARD SPECIFICATION REFERENCE
702

DATE
Mar. 2018

STANDARD DRAWING NO.
R-6020D

Page 171 of 339

SUMMARY OF QUANTITIES FOR CURB INLETS																								
DEPTH "D"	5'-0" OPENING						10'-0" OPENING						15'-0" OPENING						20'-0" OPENING					
	WIDTH 3'-0"		WIDTH 4'-0"		WIDTH 5'-0"		WIDTH 3'-0"		WIDTH 4'-0"		WIDTH 5'-0"		WIDTH 3'-0"		WIDTH 4'-0"		WIDTH 5'-0"		WIDTH 3'-0"		WIDTH 4'-0"		WIDTH 5'-0"	
	CONC C.Y.	STEEL LBS.	CONC C.Y.	STEEL LBS.	CONC C.Y.	STEEL LBS.	CONC C.Y.	STEEL LBS.	CONC C.Y.	STEEL LBS.	CONC C.Y.	STEEL LBS.	CONC C.Y.	STEEL LBS.	CONC C.Y.	STEEL LBS.	CONC C.Y.	STEEL LBS.	CONC C.Y.	STEEL LBS.	CONC C.Y.	STEEL LBS.	CONC C.Y.	STEEL LBS.
3'-6"	2.62	306	2.95	332	3.28	373	4.12	479	4.64	521	5.20	564	5.69	667	6.40	721	7.10	775	7.20	846	8.11	909	9.03	976
3'-9"	2.70	309	3.04	341	3.39	373	4.25	494	4.78	536	5.34	579	5.87	687	6.58	741	7.30	796	7.42	874	8.34	937	9.27	1010
4'-0"	2.78	328	3.14	364	3.49	399	4.38	518	4.92	565	5.49	610	6.05	718	6.77	776	7.49	835	7.64	909	8.58	976	9.51	1046
4'-3"	2.87	334	3.23	370	3.59	406	4.51	526	5.06	573	5.64	619	6.22	729	6.95	787	7.69	847	7.87	922	8.81	990	9.75	1061
4'-6"	2.95	356	3.32	394	3.69	431	4.64	558	5.20	607	5.79	656	6.40	770	7.14	830	7.88	891	8.09	973	9.04	1043	9.99	1115
4'-9"	3.03	361	3.41	410	3.79	438	4.77	566	5.34	616	5.94	665	6.57	780	7.32	841	8.07	903	8.31	986	9.27	1056	10.23	1129
5'-0"	3.12	367	3.51	416	3.90	445	4.90	574	5.47	624	6.09	674	6.75	791	7.51	853	8.27	915	8.53	999	9.50	1070	10.47	1144
5'-3"	3.20	383	3.60	424	4.00	465	5.03	600	5.61	652	6.23	704	6.93	827	7.69	890	8.46	955	8.76	1044	9.73	1118	10.71	1194
5'-6"	3.28	389	3.69	430	4.10	472	5.16	608	5.75	661	6.38	713	7.11	837	7.88	901	8.66	967	8.98	1057	9.97	1131	10.95	1208
5'-9"	3.37	405	3.78	451	4.20	495	5.29	635	5.89	690	6.53	744	7.28	874	8.07	940	8.85	1007	9.20	1102	10.20	1178	11.19	1258
6'-0"	3.45	415	3.88	460	4.30	504	5.42	646	6.03	702	6.68	757	7.45	888	8.25	954	9.05	1022	9.42	1119	10.43	1196	11.43	1276
6'-3"	3.53	425	3.97	470	4.41	515	5.55	661	6.17	718	6.83	773	7.63	908	8.44	975	9.24	1044	9.64	1147	10.66	1223	11.67	1305
6'-6"	3.62	437	4.06	486	4.51	532	5.68	681	6.31	739	6.97	797	7.81	935	8.62	1005	9.43	1057	9.87	1178	10.89	1258	11.92	1340
6'-9"	3.70	441	4.15	490	4.61	537	5.81	688	6.45	747	7.12	806	7.98	945	8.81	1015	9.63	1066	10.09	1191	11.12	1272	12.15	1355
7'-0"	3.78	460	4.25	510	4.71	560	5.94	716	6.59	777	7.27	837	8.16	981	8.99	1053	9.82	1126	10.31	1237	11.35	1319	12.40	1404
7'-3"	3.86	465	4.34	516	4.81	567	6.07	724	6.72	785	7.42	846	8.33	992	9.18	1065	10.02	1138	10.53	1249	11.59	1333	12.64	1418
7'-6"	3.95	477	4.43	529	4.91	570	6.20	742	6.86	804	7.57	866	8.51	1016	9.36	1089	10.21	1163	10.75	1290	11.82	1365	12.88	1451
7'-9"	4.03	491	4.53	544	5.02	597	6.33	762	7.00	826	7.71	890	8.67	1040	9.55	1116	10.41	1193	10.98	1313	12.05	1399	13.12	1498
8'-0"	4.12	496	4.62	550	5.12	604	6.46	770	7.14	834	7.86	899	8.86	1051	9.73	1129	10.60	1205	11.20	1325	12.28	1412	13.36	1510
8'-3"	4.20	504	4.71	559	5.22	613	6.59	784	7.28	849	8.01	915	9.04	1069	9.92	1149	10.80	1228	11.42	1353	12.51	1440	13.60	1529
8'-6"	4.28	519	4.80	576	5.32	632	6.71	804	7.42	871	8.16	938	9.21	1107	10.10	1176	10.99	1257	11.64	1385	12.74	1474	13.84	1565
8'-9"	4.37	528	4.90	586	5.42	643	6.84	819	7.56	886	8.31	954	9.39	1119	10.29	1199	11.18	1280	11.87	1410	12.97	1500	14.08	1592
9'-0"	4.45	545	4.99	605	5.53	664	6.97	842	7.70	912	8.46	982	9.56	1148	10.47	1231	11.38	1313	12.09	1447	13.21	1539	14.32	1631
9'-3"	4.53	554	5.08	614	5.63	674	7.10	858	7.84	929	8.60	999	9.74	1169	10.66	1252	11.57	1335	12.31	1474	13.44	1563	14.56	1660
9'-6"	4.62	568	5.17	630	5.73	692	7.23	878	7.97	950	8.75	1022	9.92	1195	10.84	1280	11.77	1365	12.53	1505	13.67	1600	14.80	1696
10'-0"	4.78	582	5.36	645	5.93	708	7.49	900	8.11	974	9.05	1048	10.27	1227	11.21	1312	12.16	1399	12.98	1546	14.13	1642	15.29	1739

NOTE:

FOR CONVENIENCE, DEPTHS OF INLETS SHOWN IN ABOVE TABLES ARE IN INCREMENTS OF 3 INCHES BUT ANY DEPTHS OTHER THAN THOSE SHOWN ABOVE MAY BE USED WHEREVER DEEMED NECESSARY. QUANTITIES FOR OTHER DEPTHS FALLING WITHIN THE LIMITS OF THE TABLE MAY BE FOUND BY INTERPOLATION.

ALL CONCRETE STRUCTURES SHALL BE CLASS F
(4200psi, MIN. 7.0 SACK CEMENT).
NO FLY ASH IS ALLOWED IN CONCRETE STRUCTURES.

STANDARD DRAWING NO.
R-6020E

CURB INLET

SUMMARY OF QUANTITIES

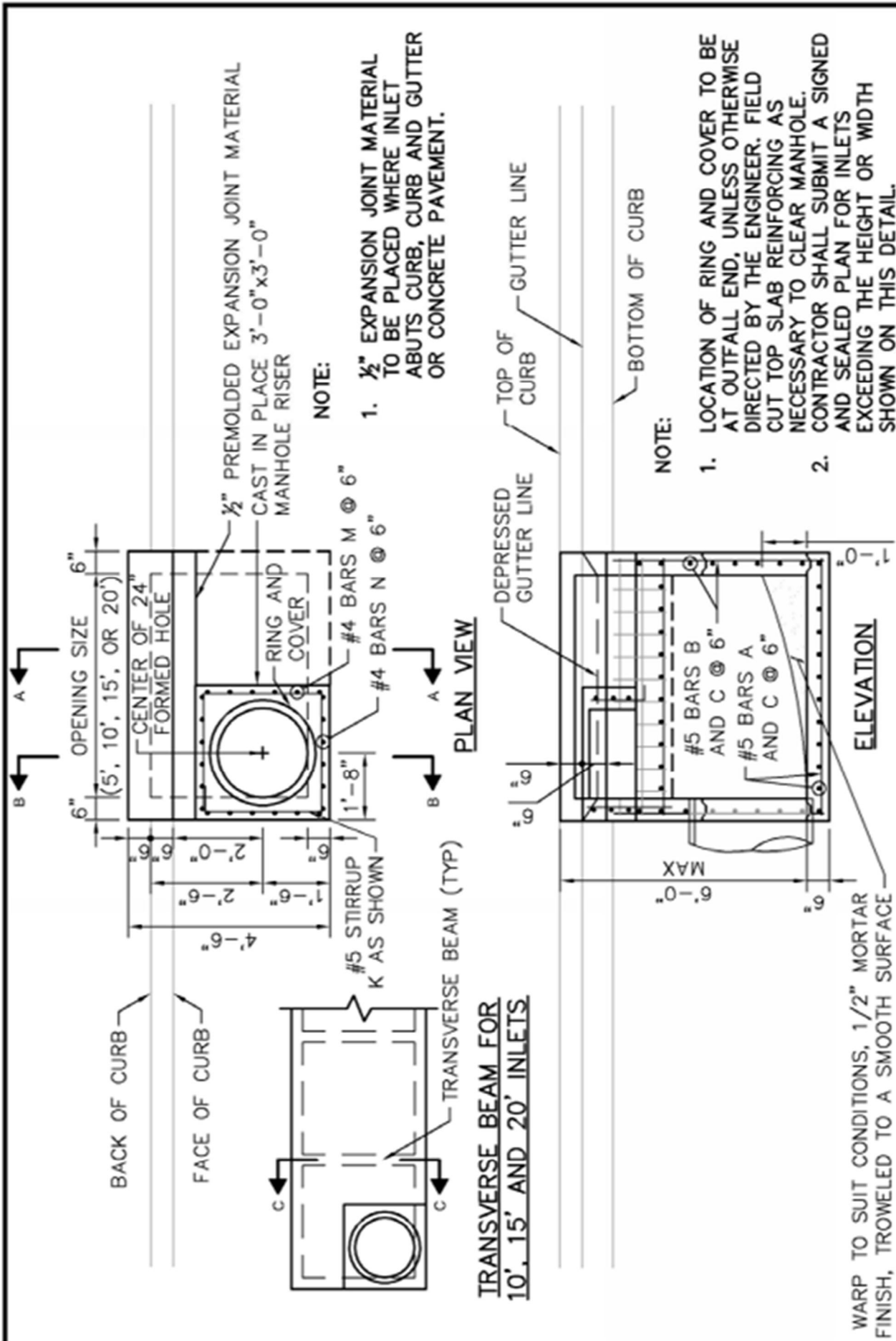
CITY OF ROCKWALL



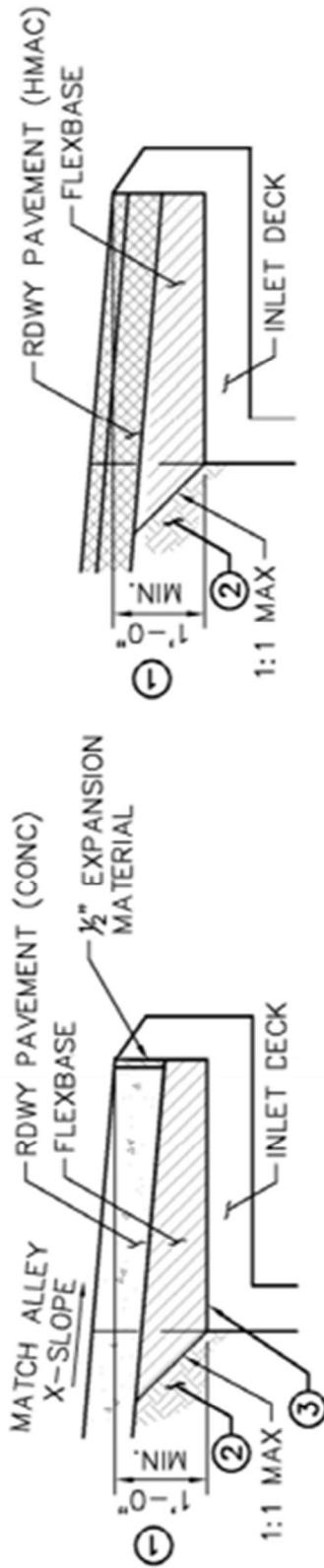
STANDARD SPECIFICATION REFERENCE
702

DATE
Mar. 2018

STANDARD DRAWING NO.
R-6020E



SHEET 1 OF 5	ALLEY CURB INLET UNDER PAVEMENT	CITY OF ROCKWALL	STANDARD SPECIFICATION REFERENCE 702	
			DATE MAR 21'	STANDARD DRAWING NO. R-6022



- ① THICKNESS OF RDWY PAVEMENT PLUS FLEXBASE: IF LESS THAN 1'-0", INCREASE DEPTH OF FLEXBASE.
- ② SUBGRADE MATERIAL PER ROADWAY PAVEMENT DESIGN.
- ③ IF CONCRETE PAVEMENT IS PLACED DIRECTLY ON INLET DECK, APPLY APPROVED BOND BREAKER TO SURFACE OF INLET.

INLET ADJACENT TO PORTLAND CEMENT CONCRETE PAVEMENT

INLET ADJACENT TO HOT MIX ASPHALT PAVEMENT

GENERAL NOTES:

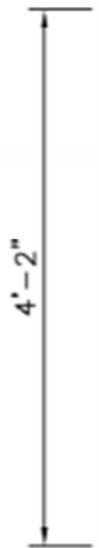
1. DESIGNED IN ACCORDANCE WITH AASHTO LRFD, 8TH EDITION, FOR THE FOLLOWING LOADS:
DEAD LOAD: SELF-WEIGHT
LIVE LOAD: HL-93
EARTH PRESSURE: 100 PSF/FT
2. ALL REINFORCING STEEL SHALL BE GRADE 60.
3. ALL CONCRETE SHALL BE CLASS F (4,200 PSI, MIN. 7.0 SACK CEMENT). ALL EXPOSED CORNERS SHALL BE CHAMFERED 3/4".
4. ALL REINFORCING STEEL SHALL HAVE A MINIMUM COVER OF 2.0" TO THE CENTER OF THE BAR.
5. ALL BACK FILLING SHALL BE PERFORMED BY MECHANICAL TAMPING TO 95% STANDARD PROCTOR DENSITY.
6. NO FLY ASH IS ALLOWED IN CONCRETE STRUCTURES.
7. NO EARTH WALL FORMS, DOUBLE WALL FORMS TO BE USED.
8. FORMED CONCRETE ABOVE PIPE SHALL BE 0'-6" MIN. MAXIMUM PIPE SIZE - 30".

SHEET 3 OF 5

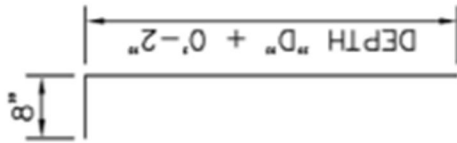
ALLEY CURB INLET UNDER PAVEMENT	 CITY OF ROCKWALL	STANDARD SPECIFICATION REFERENCE 702	
PVMT CONNECTION & GENERAL NOTES		DATE MAR 21'	STANDARD DRAWING NO. R-6022



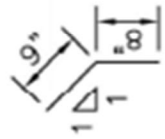
#5 BARS A & B



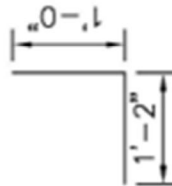
#5 BARS C



#5 BAR D



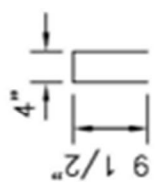
#5 BAR E



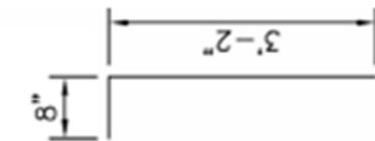
#5 BAR F



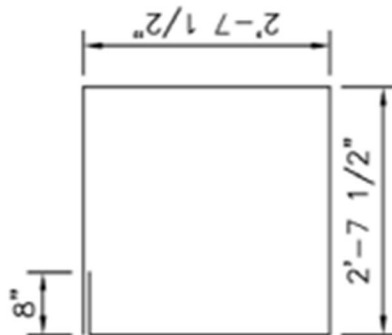
#4 BAR J



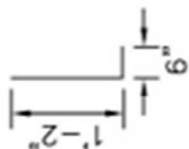
#4 BAR G



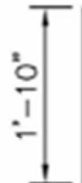
#5 BAR H



#5 BAR K



#4 BAR M



#4 BAR N



BILL OF REINFORCING STEEL

DEPTH "D"	OPENING LENGTH = 5 FT												OPENING LENGTH = 10 FT											
	BARS	BARS	BARS	BARS	BARS	BARS	BARS	BARS	BARS	BARS	BARS	BARS	BARS	BARS	BARS	BARS	BARS	BARS	BARS	BARS	BARS	BARS	BARS	BARS
A	#5	#5	#5	#5	#5	#5	#5	#5	#5	#5	#5	#5	#5	#5	#5	#5	#5	#5	#5	#5	#5	#5	#5	#5
BAR SIZE	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
4'-0"	32	"	32	"	32	"	32	"	32	"	32	"	32	"	32	"	32	"	32	"	32	"	32	"
4'-6"	34	"	34	"	34	"	34	"	34	"	34	"	34	"	34	"	34	"	34	"	34	"	34	"
5'-0"	36	"	36	"	36	"	36	"	36	"	36	"	36	"	36	"	36	"	36	"	36	"	36	"
5'-6"	38	"	38	"	38	"	38	"	38	"	38	"	38	"	38	"	38	"	38	"	38	"	38	"
6'-0"																								
DEPTH "D"	OPENING LENGTH = 15 FT												OPENING LENGTH = 20 FT											
	BARS	BARS	BARS	BARS	BARS	BARS	BARS	BARS	BARS	BARS	BARS	BARS	BARS	BARS	BARS	BARS	BARS	BARS	BARS	BARS	BARS	BARS	BARS	BARS
A	#5	#5	#5	#5	#5	#5	#5	#5	#5	#5	#5	#5	#5	#5	#5	#5	#5	#5	#5	#5	#5	#5	#5	#5
BAR SIZE	30	52	58	34	34	34	34	34	34	34	34	34	30	63	69	45	45	39	21	40	4	4	3	12
4'-0"	32	"	60	"	"	"	"	"	"	"	"	"	32	"	71	"	"	"	"	"	"	"	"	"
4'-6"	34	"	62	"	"	"	"	"	"	"	"	"	34	"	73	"	"	"	"	"	"	"	"	"
5'-0"	36	"	64	"	"	"	"	"	"	"	"	"	36	"	75	"	"	"	"	"	"	"	"	"
5'-6"	38	"	66	"	"	"	"	"	"	"	"	"	38	"	77	"	"	"	"	"	"	"	"	"
6'-0"																								

SHEET 5 OF 5

ALLEY CURB INLET UNDER PAVEMENT

BILL OF REINFORCING STEEL

CITY OF ROCKWALL



STANDARD SPECIFICATION REFERENCE
702

DATE
MAR 21'
STANDARD DRAWING NO.
R-6022

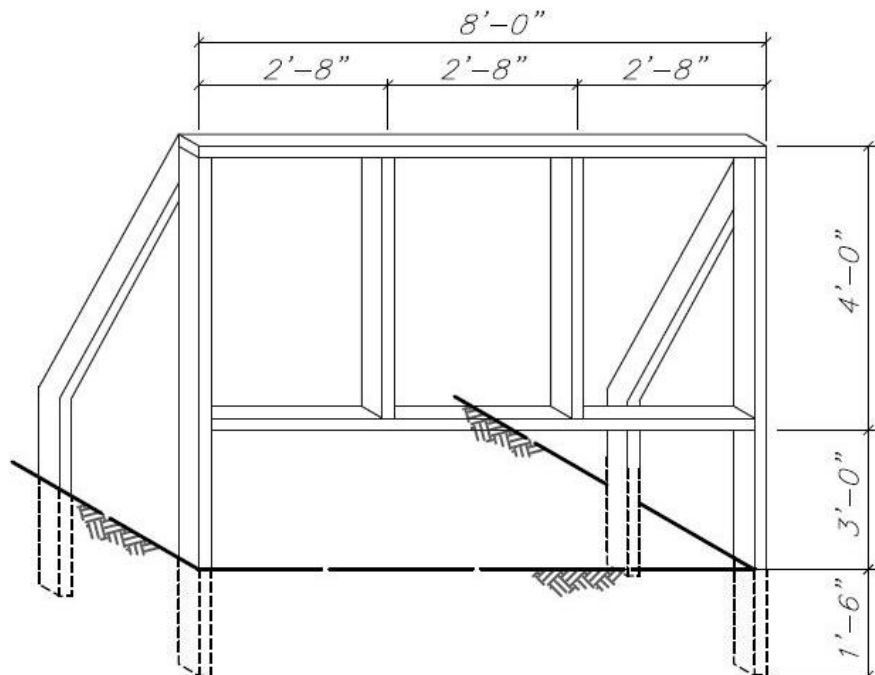
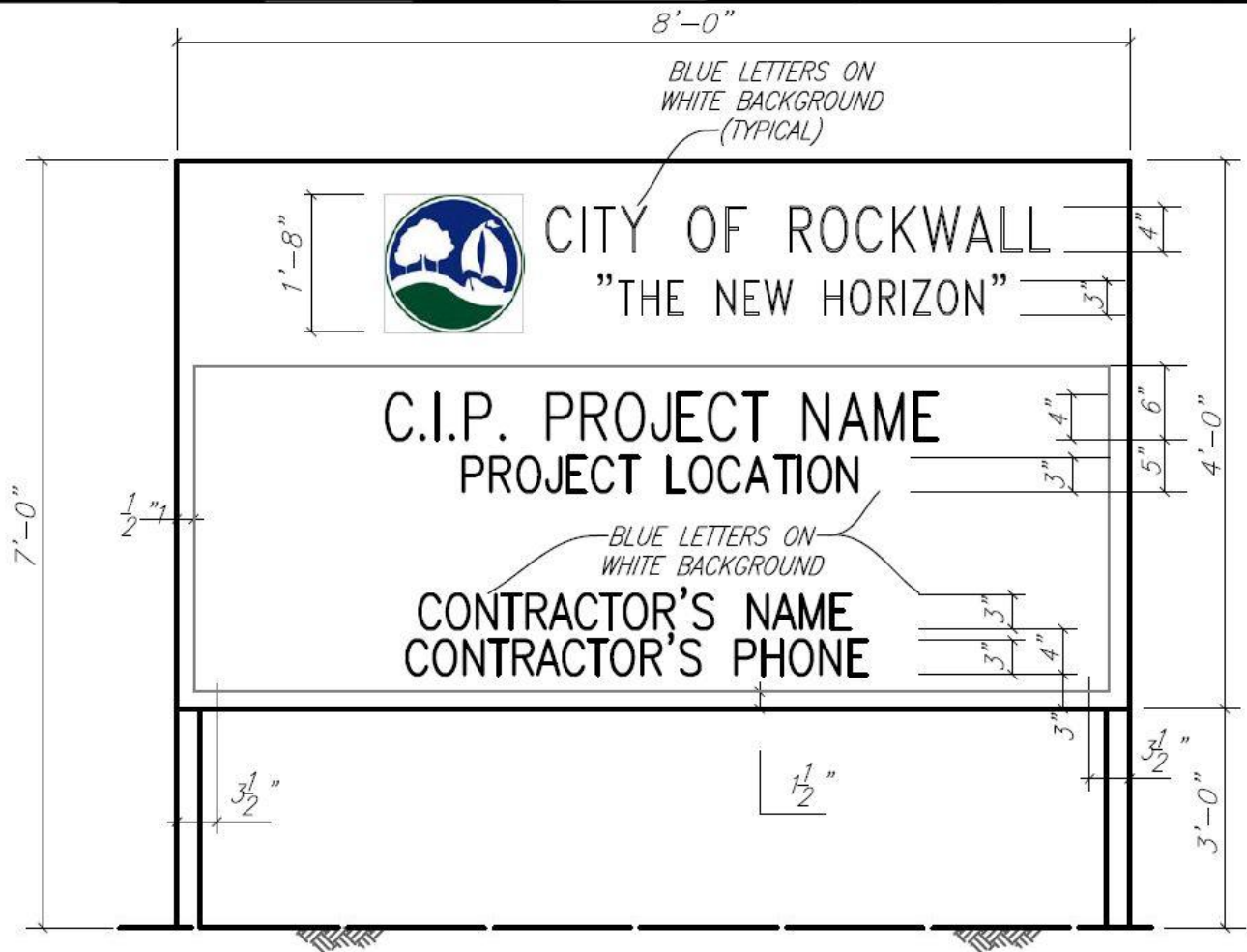


Division 7000 Rockwall Miscellaneous Details

This Division 7000 is to be added to the NCTCOG's Standard Drawings for Public Works Construction Standards. Division 7000 contains miscellaneous standard details added by the City. The following Table 9.7 contains a list of the miscellaneous standards being added.

Table 9.7: Division 7000 Rockwall Miscellaneous Details

<u>Drawing No.</u>	<u>Subject</u>
R-7010	Miscellaneous Details – Construction Sign Detail



SIGN FRAME ELEVATION

SIGN PANEL 3/4" EXTERIOR PLYWOOD
PAINT AS SHOWN ON DETAIL ABOVE

FRAME 2"x4" STOCK FRAME TO BE
PAINTED WHITE

ALL PAINT TO BE "EXTERIOR GRADE"

MISCELLANEOUS DETAILS

CONSTRUCTION SIGN DETAIL

CITY OF ROCKWALL



DATE
AUG. '15

DRAWING NO.
R-7010

**CITY OF ROCKWALL, TEXAS
SPECIAL CONDITIONS
NORTH LAKESHORE DRIVE RECONSTRUCTION**

SC.1 AWARD OF CONTRACT

For this Contract the City of Rockwall has adopted the North Central Texas Council of Governments Public Works Construction Standards, 5th Edition (November 2017), as amended by the City of Rockwall. The City of Rockwall has elected to revise the amended Item 103.2 Award of Contract with the following:

Delete Item 103.2 in its entirety and substitute therefore the following:

It is the intent of the Owner to award a contract for the work included in this project on the basis of the most qualified proposal submitted by a qualified bidder, as determined by the Owner and Committee.

The "Award of Contract" shall be in accordance with "Proposal Evaluation Process" and applicable Government Code.

SC.2 GENERAL

The "General Conditions of Agreement" shall be those set forth in the 5th Edition, November 2017, of the Standard Specifications for Public Works Construction, North Central Texas, General Provisions and the City of Rockwall's Addendum to the "Standard Specifications for Public Works Construction for North Central Texas" and shall be maintained unless there exists a conflict with the provisions of this section, in which case the provisions of the Special Conditions shall govern.

SC.3 ENGINEER

The word "Engineer" in these specifications shall be understood the Rockwall City Engineer, or such other representatives as may be authorized by said Owner to act in any particular position.

SC.4 LOCATION OF PROJECT

The location of the project is N Lakeshore Drive from SH 66 to Masters Boulevard within the City of Rockwall.

SC.5 SCOPE OF WORK

The work to be performed under this contract shall consist of furnishing all labor, material and equipment, and performing all work required for reconstruction of roadway concrete pavement, alley/driveway concrete pavement, sidewalk, storm drain, water line, sanitary sewer, and replacement of parkway landscaping improvements, including but not limited to the approximate quantities listed in the Bid Schedule.

SC.6 FORMS, PLANS AND SPECIFICATIONS

Forms of proposal, contract and bonds, and plans and specifications can be obtained from the Consultants Office a \$100.00 charge or downloaded free of charge at the following website:

<http://www.civcastusa.com>

SC.7 TIME ALLOTTED FOR COMPLETION, NOTICE TO PROCEED AND CONSTRUCTION SEQUENCE

All items of work on the entire project shall be completed within **550 - 730 Calendar Days, (NO DAYS EXCEPTED)** which time shall commence on the tenth (10th) day after issuance of the work order. The work order shall consist of a written request by the Engineer for the Contractor to proceed with construction of the project. The City of Rockwall requires 48 hours prior notice for work on Saturdays. No work shall be allowed on Sundays and City Holidays.

SC.8 ADDENDA

Bidders desiring further information or interpretation of the plans and specifications must make request for such information to the Engineer prior to seventy-two (72) hours before the bid opening. Answers to all such requests will be given in writing to all bidders in addendum form and all addenda will be bound with and made a part of the contract documents. No other explanation or interpretation will be considered official or binding. Any addenda issued prior to twenty-four (24) hours before the opening of bids will be e-mailed or faxed to each Contractor contemplating the submission of a proposal on this work. The proposal as submitted by the Contractor will be so constructed as to include any addenda if such are issued by the Engineer prior to twenty-four (24) hours before the opening of bids.

SC.9 PERMITS AND RIGHT-OF-WAY

The Owner will provide rights-of-way for the purpose of construction without cost to the Contractor by securing permits in areas of public dedication or by obtaining easements across privately owned property. It shall be the responsibility of the Contractor, prior to the initiation of construction on easements through private property, to inform the property owner of his intent to begin construction. Before beginning construction in areas of public dedication, the Contractor shall inform the agency having jurisdiction in the area forty-eight (48) hours prior to initiation of work.

SC.10 PROPERTY LINES AND MONUMENTS

The Contractor shall protect all property corner markers, and when any such markers or monuments are in danger of being disturbed they shall be properly referenced and if disturbed shall be reset at the expense of the Contractor.

SC.11 EXISTING UTILITIES AND SERVICE LINES

The Contractor shall be responsible for the protection of all existing utilities or service lines crossed or exposed by his construction operations. Where existing service lines are cut, broken or damaged, the Contractor shall replace the service lines with the same type of original construction, or better, at his own cost and expense.

SC.12 PUBLIC UTILITIES AND OTHER PROPERTY TO BE CHANGED

In case it is necessary to change or move the property of any owner or of a public utility, such property shall not be moved or interfered with until authorized by the property owner or the utility company and approved by the Engineer. The right is reserved to the property owner or to public utilities to enter upon the limits of the project for the purpose of making such changes or repairs of their property that may be made necessary by the performance of this contract.

SC.13 FENCES

Boundary fences, gates or other improvements removed to permit this construction shall be replaced in the same location and left in a condition as good as or better than that in which they were found. City approval is required before removing fences.

SC.14 DRAINAGE CHANNELS

Where surface drainage channels are disturbed or blocked during construction, they shall be restored to their original condition of grade and cross section after the work of construction is completed.

SC.15 PROJECT MAINTENANCE

The Contractor shall maintain, and keep in good repair, the improvements covered by these plans and specifications during the life of his contract.

SC.16 CLEANUP

The Contractor shall at all times keep the job site as free from all material, debris and rubbish as is practicable and shall remove same from any portion of the job site as construction of that portion is completed. No items of work will be considered complete for payment purposes until required cleanup has been performed.

Upon completion of the work, the Contractor shall remove from the site all plant, materials, tools and equipment belonging to him and leave the site with an acceptable appearance.

SC.17 COORDINATION WITH OTHERS

In the event other contractors are doing work in the same area simultaneously with this project, the Contractor shall coordinate his proposed construction with that of the other Contractors.

SC.18 BARRICADES, DETOURING LIGHTS AND WATCHMEN

The Contractor shall, at his own cost and expense, furnish and erect such barricades, fences, lights and danger signals, shall provide such watchmen, and shall provide such other precautionary measures for the protection of persons or property and of the work as are necessary. Barricading and detouring shall be in strict conformance with Part IV, Construction and Maintenance, of the Texas Manual on Uniform Traffic Control Devices for Streets and Highways, latest revision. From sunset to sunrise, the Contractor shall furnish and maintain at least one light at each barricade and sufficient numbers of barricades shall be erected to keep vehicles from being driven on or into any work under construction. The Contractor shall furnish watchmen in sufficient numbers to protect the work.

The Contractor will be held responsible for all damage to the work due to failure of barricades, signs, lights and watchmen to protect it and whenever evidence is found of such damage the Contractor shall immediately remove the damaged portion and replace it at his cost and expense. The Contractor's responsibility for the maintenance of barricades, signs, and lights, and for providing watchmen shall not cease until the project has been accepted by the Owner.

No roadways or lanes shall be closed overnight, Contractor shall provide a safe passable roadway. During the day roadways shall always be passable with at least one lane of traffic.

Furnish, installing and maintaining traffic control devices shall be paid for at the lump sum contract unit price as provided in the Proposal and Bid Schedule.

SC.19 DISPOSAL OF WASTE AND SURPLUS EXCAVATION

All excavated earth in excess of that required for backfilling shall be disposed of in a satisfactory manner in locations approved by the Owner's representative.

SC.20 LIGHTS AND POWER

The Contractor shall provide, at his own expense, temporary lighting and power required for the proper prosecution of the work.

SC.21 EXAMINATION OF PROJECT SITE

Prospective bidders shall make a careful examination of the site of the project, soil and water conditions to be encountered, improvements to be protected, disposal sites for surplus materials not designated to be salvaged materials, and as to method of providing ingress and egress to private properties, and methods of handling traffic during construction of the entire project.

SC.22 CONSTRUCTION IN PUBLIC ROADS AND PRIVATE DRIVES

No public road shall be closed overnight. Contractor shall always keep one lane of traffic open on roadways at all times. It shall be the responsibility of the Contractor to build and maintain all weather bypasses and detours, if necessary, and to properly light, barricade and mark all bypasses and detours that might be required on and across the roads involved in the work included in this contract.

The Contractor shall make every effort to complete construction and allow immediate access to adjacent property at driveway entrances located along the roads. Owners or tenants of improvements where access and/or entrance drives are located shall be notified at least twenty-four (24) hours prior to the time the construction will be started at their drive-ins or entrances and the Contractor shall provide temporary ingress to entrance drives where necessary.

The Contractor shall be responsible for all road and entrance reconstruction and repairs and maintenance of same for a period of one year from the date of such reconstruction. In the event the repairs and maintenance are not made immediately to the satisfaction of the Engineer, and it becomes necessary for the State, County or City to make such repairs, the Contractor shall reimburse the State, County or City for the cost of such repairs.

The Contractor shall, at all times, keep a sufficient width of the roadway clear of dirt and other materials to allow the free flow of traffic. The Contractor shall assume any and all responsibility for damage, personal or otherwise, that may be caused by the construction along roads or private drives.

SC.23 CONSTRUCTION SCHEDULE AND CASH FLOW PROJECTIONS

Prior to starting work, the Contractor shall submit a proposed schedule and monthly cash projections for the work included herein and shall submit any major revisions to this schedule as the project progresses. Partial payments will not be made until monthly cash flow projections are submitted.

SC.24 PROTECTION OF TREES

The Contractor shall make every reasonable effort to protect all trees. No trees shall be removed without approval of the City. **All trees within construction area approved to be removed shall be done by contractor.**

SC.25 CONNECTION TO EXISTING FACILITIES

Unless otherwise specified or indicated, Contractor shall make all necessary connections to existing facilities including structures, drain lines, and utilities such as water, sewer, gas, telephone, and electric. In each case, Contractor shall receive permission from Owner or the owning utility prior to undertaking connections.

Connections to existing facilities which are in service shall be thoroughly planned in advance, and all required equipment, materials and labor shall be on hand at the time of undertaking the connections. Work shall proceed continuously (around the clock) if necessary to complete connections in the minimum time. No additional compensation (pay) shall be given for any night time, Saturday, Sunday or Holiday work if required to make the connections. Payment for these connections shall be under the pay items established or are considered subsidiary to the other pay items of the project if no pay item exist for the project.

Operations of valves or other appurtenances on existing utilities, when required, shall be by or under the direct supervision of the Owner.

SC.26 SOIL BORINGS

Soil Borings are provided in this project see included geotechnical report.

SC.27 TRENCH BACKFILL

Trench backfill shall not proceed without inspection of the embedment and authorization to proceed by the Inspector or Engineer. Any trench backfill placed without inspection of the embedment shall be removed at the Contractor's expense to allow for inspection of the embedment.

SC.28 MARKING UNDERGROUND UTILITIES

All utilities and services shall all be marked with plastic tape which conforms to the standards listed below. If utility companies mark their underground utilities in right-of-ways or easements it shall conform to the following:

A. Location of tape:

1. A minimum of one-foot (1') directly above the utility,
2. A maximum of two-feet (2') below the ground surface.

B. Tape size and material composition:

1. Plastic mark tape shall be acid and alkali resistant polyethylene film,
2. Three inches (3") wide,
3. A minimum thickness of 0.004 inch,
4. Tape shall have a minimum strength of 1750 psi lengthwise and 1500 psi crosswise,
5. The tape shall be manufactured with integral wires, foil backing or other means to enable detection by a metal detector when the tape is buried up to three feet (3') deep. The tape shall be of a type specifically manufactured for marking and locating underground utilities.
6. The metallic core of the tape shall be encased in a protective jacket or provided with other means to protect it from corrosion.

C. Tape color and EMS disks shall be as specified below and shall bear a continuous printed inscription describing the specific utility.

Color	Utility
Red	Electric
Yellow	Gas, oil, dangerous materials
Orange	Telephone, telegraph, television, police, and fire communications
Blue EMS Disks	Water System per City Standards
Green EMS Disks	Sewer System per City Standards

There is no separate pay item for marking underground utilities in accordance with the specifications. Payment is considered subsidiary to the appropriate bid items as provided in the Proposal and Bid Schedule.

SC.29 WORK ON SATURDAY, SUNDAY AND CITY HOLIDAYS

Work shall not be performed on Sundays and City Holidays (New Year's Day, Martin Luther King Day, Presidents' Day, Good Friday, Memorial Day, Independence Day, Labor Day, Thanksgiving Day & Friday, and Christmas Eve & Christmas Day). When work must be performed on Saturdays the contractor must request permission to work at least 48 hours in advance. (See Inspection Scheduling Section)

SC.30 INSPECTION SCHEDULEING

Inspections may be scheduled and coordinated in the field or by cell phone directly with the Engineering Inspector. Sufficient advanced notice shall be given to the inspector. Before/After hours and weekend inspections must be scheduled in writing, using the request form located on the City's Engineering Webpage, to the Engineering Division by noon on the Thursday before the inspection date. No site construction inspection will be conducted during City observed holidays. If the observed holiday falls on a Friday, the Saturday following the observed holiday will be designated as a No Inspection Holiday. If the holiday falls on a Monday, the Saturday preceding the holiday will be designated as a No Inspection Holiday.

SC.31 NOISE CONTROL ORDINANCE

The City of Rockwall requires that a sign be posted at each Commercial/Residential development construction site.

Ordinance # 05-45
Construction Site Working Hours and Noise Control

City Ordinance – No. 05-45 limits construction and construction related activities to the hours of 7:00 a.m. - 7:00 p.m. Monday through Friday, and 8:00 a.m. - 7:00 p.m. on Saturday. (No Sunday construction allowed).

ORDENANZA #05-45
HORAS DE TRABAJO EN EL SITIO DE CONSTRUCCION Y EL CONTROL DE RUIDO

La Ordenanza de la Ciudad – No. 05-45 limita la construcción y las actividades relacionadas con la construcción a las horas de 7:00 a.m. – 7:00 p.m. de Lunes a Viernes, y de 8:00 a.m. – 7:00 p.m. los Sábados. (No se permitirá construcción los Domingo).

Noise Ordinance Sign
(Sign Size – 3' wide x 2' tall)

The construction related activities are to include but not be limited to the following:

1. Maintenance, servicing and fueling of construction equipment.
2. The delivery of construction related materials and/or construction equipment.

At locations where compliance to Ordinance 05-45 is not being observed, the City of Rockwall may issue written orders to stop work or further regulate the site construction work hours. The City may also issue citations if it is determined that a violation of the construction ordinance exist.

SC.32 MATERIAL STORAGE

Materials may be stockpiled at locations approved by the Owner. All stockpiling methods must be approved by the City of Rockwall.

The storage site shall be determined at the preconstruction meeting after the award of contract.

Contractor shall be fully responsible for the storage site and must receive written property owner permission recorded with the City.

If necessitated, Contractor shall erect a temporary fence and store materials inside of the fenced area.

The Contractor shall maintain the storage area in a neat and orderly manner. If, in the opinion of the Engineer, the storage site becomes unsightly, the Contractor shall clean up the storage site within two (2) days of notification to do so.

At the completion of the contract, the Contractor shall remove the temporary storage fence and all debris in the area. The Contractor shall restore the storage site to the original condition, including, if necessary, grading and turf re-establishment.

SC.33 SITE

The Contractor shall limit his work to the right-of-ways, easements, or construction limits shown on the Drawings.

SC.34 EXISTING UTILITIES, STRUCTURES AND OTHER PROPERTY

The Contractor's attention is directed to the necessity of taking adequate measures to protect all existing structures, improvements and utilities which may be encountered. These may include, but are not limited to the following:

- A. Utilities: Including water mains and services, water meter boxes, oil and air lines, gas mains and services, sanitary sewers and service connections, storm sewers, telephone conduits, and electric conduits.
- B. Street and Drives: Contractor shall at all times maintain streets and drives in a condition which will provide easy ingress and egress.

It shall be the responsibility of the Contractor to cooperate with the Owners of all public and private utilities to locate, prior to opening trench, existing underground facilities and to notify the Engineer at once of any conflicts in grades and alignment. Every effort will be made by the Engineer to control alignment and grading to avoid conflict with existing utilities, but should change in alignment and grade be necessary, such changes will be made by the Contractor at his expense and no extra payment beyond the unit prices bid will be allowed by the Owner.

Where excavation endangers adjacent structures and utilities, the Contractor shall at his own expense carefully support and protect all such structures and/or utilities so that there will be no failure due to settlement, where it is necessary to move services, poles, guy and he shall cooperate with the utility owner.

Except as indicated on the drawings that utilities are to be moved by others, any costs of temporarily or permanently relocating utilities shall be borne by the Contractor without extra compensation from the Owner. In case damage to an existing structure or utility occurs, whether failure or settlement; the Contractor shall restore the structure or utility to its original condition and position without compensation from the Owner.

Before beginning work on this project the contractor shall submit, for approval by the Owner, a plan of construction operations outlining in detail a sequence of work to be followed, setting out the method of handling traffic.

The contractor shall, plan his construction phasing in such a manner as to cause minimal interference with traffic during the construction operations.

The contractor shall keep traveled surfaces clean and free of debris or other materials of construction.

To facilitate shifting, barricades and signs used in lane closure or traffic staging may be erected and mounted on portable supports, the design of these being subject to the approval of the engineer.

SC.35 MAINTENANCE PROVISIONS FULFILLMENT

Prior to the expiration of the specified maintenance period provided for in the Contract, the Owner will make a detailed inspection of the project and will advise the Contractor and his surety of the items that require correction. The Owner will make subsequent inspection and if the corrections have been properly performed, the Owner will issue a letter of release on the maintenance stipulations to the Contractor and his surety. If, for any reason, the Contractor has not made the required corrections before the expiration of the maintenance period, the

maintenance stipulations, as provided for in the Contract, shall remain in effect until the corrections have been properly performed and a letter of release issued.

SC.36 ACCESS TO PROPERTY

To the fullest extent practicable, the Contractor shall conduct his operations and work in such a manner that necessary ingress and egress will be provided to the tenants of both residential and commercial property. During all construction operations bridges; or other means of crossing trenches, ditches, and other excavation shall be provided by the Contractor at his expense and all operations shall be conducted in a manner which will result in a minimum of inconvenience to tenants of property adjacent to the work.

SC.37 LANDSCAPE & TREE TREATMENTS

Where trees, plants, shrubbery, etc., are adjacent to the line of the work and are not to be removed or are to be removed and replaced, the Contractor shall protect such trees, plants, shrubbery, landscaping, etc., by substantial wooden boxes or guards to be installed beyond the drip-line, and shall not permit machinery or employees to scrape, tear the limbs from, damage or attach guy cables to them and if, in the opinion of the Owner, such trees, plants, shrubbery, landscaping, etc., would be damaged by machinery, etc., hand excavation may be required. The Contractor shall be responsible for all damages to adjacent trees, plants, shrubbery, etc.

Existing trees, plants, shrubbery, etc., encountered on the site which are not indicated on the plans shall be considered as trees to remain and shall be protected. If these trees are in conflict with construction, the Contractor shall relocate the trees to an approved location, unless otherwise directed by the Owner, at no additional cost to the Owner.

All disturbed turf shall be reestablished to original condition prior to completion of construction. This Turf Re-establishment shall not be a separate pay item and shall be subsidiary to the entire project, unless noted otherwise.

SC.38 MOWING AND DEBRIS MAINTENANCE

During construction and through to final acceptance, the Contractor, at his expense, shall be responsible for maintaining the existing turf areas within the work area. The Contractor shall mow this area as often as necessary to maintain the turf areas, at a 2" to 2-1/2" maximum height. Minimum cutting height for the turf shall be 1-1/2". At no time shall weeds within the maintenance limits reach a height greater than 12" in compliance with City Ordinance 908.

If, in the opinion of the City or Engineer, the site becomes unsightly, the Contractor shall mow the site within two (2) days after notification from Owner to do so.

The Contractor at all times shall keep the construction site free from accumulation of waste materials, rubbish, debris, etc. caused by his operations. Waste materials, rubbish, debris, etc. shall be cleaned up daily and removed from the project site at least once a week.

No payment will be made for this work, its cost being subsidiary to the entire project.

SC.39 INCIDENTAL WORK

All minor details of work which are shown on the plans (but there is not a specific item in the Bid Schedule), not shown on the plans and such items which are not specifically mentioned in the specifications, but are obviously necessary for the proper completion of the work, shall be considered as incidental, and as being a part of and included with the work for which prices are given in the proposal, and no extra compensation shall be allowed the contractor for the performance thereof.

SC.40 DUST CONTROL

Sprinkling and street sweeping as ordered by the Owner to allay dust on this project will not be paid for directly but shall be considered subsidiary to the various bid items.

SC.41 TRADE NAMES AND ALTERNATIVES

For convenience in designation on the plans or in the specifications, certain articles or materials to be incorporated in the work may be designated under a trade name or the name of a manufacturer and its catalogue information. The use of an alternative article or material which is of equal quality and of required characteristics for the purpose intended, will be permitted subject to the following requirements:

The burden of proof as to the quality and suitability of alternatives shall be upon the contractor, and the contractor shall furnish all necessary information required by the engineer. The Owner shall be the sole judge as to the quality and suitability of alternative articles or materials, and the Owner's decision shall be final.

SC.42 SITE DRAINAGE

The Contractor shall maintain adequate site drainage at all times. Drainage runoff will be confined to the limits of the construction project and shall not be diverted over private property. Any runoff presently traversing private property shall not be increased by cause of construction. The Contractor shall provide, maintain and remove all necessary and required erosion control devices in accordance with the North Central Texas Council of Governments Standard Specifications for Public Works Construction, Item 201, as amended.

SC.43 SUBMITTALS (SHOP DRAWINGS)

The Contractor shall submit shop drawings (catalog data, assembly drawings, weight, sketches, etc.) for the following materials and other items as required by Engineer:

- Paving: Concrete batch design, asphalt design
- Water Lines: Piping, fittings, valves, meter cans and all other appurtenances
- Wastewater Lines: Piping, manholes, cleanouts, by-pass pumping plan/equipment and all other appurtenances
- Drainage Lines: Piping, Pre-cast items, concrete batch designs and all other appurtenances
- Traffic Signals: Drill shaft foundations, conduit, electrical conductors, ground boxes, electrical services, control cabinet, opticom, cables, pedestrian equipment, VIVDS, ILSN, and all other appurtenances.

All submittals shall be in PDF format and emailed to the Engineer, City Project Manager and Construction Inspector. Each submittal shall be its own separate PDF and have the Cities "Contractor Submittal Transmittal Form" as the first page. The Cities "Contractor Submittal Transmittal Form" found in the Appendix shall be used and completed with each submittal.

SC.44 TRENCH SAFETY SYSTEM

The Contractor may utilize all area within the permanent and right-of-way to facilitate trench safety systems. No work shall extend outside of the easements. Contractor shall submit a trench safety system plan/competent person's letter to the City prior to start of construction.

SC.45 TCEQ STORM WATER PERMIT

In accordance with the TCEQ General Permits for Storm Water Discharge from Construction Sites, Contractor shall prepare and submit a Notice of Intent, prepare a Storm Water Pollution Prevention Plan (SWPPP) and implement the plan during construction.

The Notice of Intent (NOI) must be submitted prior to clearing and grubbing. The NOI should be sent to TCEQ and one copy to the Owner.

The SWPPP must be prepared prior to the submittal of the NOI. The SWPPP must be on file at the construction site and be available upon request to TCEQ or local agencies, and Owner. The Contractor shall be responsible for implementing, updating and modifying per regulatory agency requirements, inspection, and monitoring the SWPPP.

The Contractor shall retain records or copies of all reports by this permit for a period of at least three (3) years from date of Final Completion.

SC.46 SURVEY CONTROL AND CONSTRUCTION STAKES

Refer to the City of Rockwall Addendum to the North Central Texas Standard Specifications for Public Works Construction, Section 105.4. Delete the City's Addendum to Section 105.4 in its entirety. The Contractor shall be required to utilize the control monuments provided in the plans to set horizontal and vertical control and construction staking with the contractor's own surveyor.

SC.47 WAGE RATES

All employees of the Contractor on the work to be performed under this contract shall be paid the prevailing wage scale in this locality for work of a similar character, and in no event less than the rates shown in the schedule of minimum wage rates furnished in these specifications.

SC.48 MATERIAL TESTING

The City will furnish material testing for this project. Any re-testing due to the failure of the first test will be paid by the contractor. The City will reduce the Contractor's invoice by the cost of any retests.

SC.49 GRASS REPLACEMENT

The Contractor shall replace all grass disturbed by this project. The pay limit is the areas within the right-of-way and/or easement. The Contractor is responsible (at their expense) to replace grass in any additional disturbed areas.

SC.50 REQUEST FOR INFORMATION (RFI)

The Contractor shall submit in PDF format by email to the Engineer, City Project Manager and Construction Inspector all Request for Information on the form provided in the Appendix. The form shall be completed and detail out all information being requested by the Contractor.

SC.51 MONTHLY PAY APPLICATION & MONTHLY PROJECT CONSTRUCTION STATUS REPORT

On and around the 25th of the month the contractor shall submit Pay Application on City Pay App Form for the work performed that month. As part of the pay app the contractor will need to complete the Monthly Project Construction Status Report. The pay app will need to be emailed in PDF format to the City's Engineering Project Manager and Construction Inspector for review. The Monthly Project Construction Status report will be used to gauge the progress of work on the project. The City's Engineering Project Manager, Construction Inspector and contractor's representative will have a meeting to go over the monthly pay app and construction status report. This meeting will be to review and finalize the monthly pay app and construction status report before approval and processing. The typical turnaround time for the pay app should be "approximately" (10) working days of receipt by the Director of Public Work/City Engineer.

SC.52 PRE-CONSTRUCTION VIDEO

The Contractor shall submit to the Cities Construction Inspector a pre-construction video, on DVD or flash drive, of the entire project site before the start of work. This video shall be used during the project to dispute any pre-existing conditions on the project.

BID ITEM DESCRIPTIONS
N LAKESHORE DRIVE RECONSTRUCTION

GENERAL MEASUREMENT AND PAYMENT

Any and all work specifically called for in the Contract Documents or which is required for the proper construction of items called for in the Contract Documents is to be performed by Contractor unless specifically indicated otherwise. The cost of all work for which there is no separate pay item in the proposal shall be included in the price for a related pay item such that work called for or required by the Contract Documents will be constructed for the Contract Price.

The following descriptions are intended to clarify the nature of the work required for this project. The provisions of the standard specifications shall apply, except as otherwise noted herein.

Only items in the Proposal are Pay Items. Other specification items will be complied with; however, their measurement and payment provisions are hereby deleted.

The price bid shall cover all work required by the Contract Documents. All costs in connection with the proper and successful completion of the work, including furnishing all materials, equipment, supplies, and appurtenances; providing all construction plant, equipment, and tools; and performing all necessary labor and supervision to fully complete the work, shall be included in the unit and lump sum prices bid. All work not specifically set forth as a pay item in the Proposal shall be considered a subsidiary obligation of the Contractor and all costs in connection therewith shall be included in the prices bid.

All items shall be measured, complete and in place, in accordance with the units listed in the bid form.

Work that is subsidiary to Pay Items includes, but is not limited to, insurance and bonds; surveying and construction staking; establishment of a growth of grass in areas outside of pay limits; replacement of property markers or monuments disturbed; dewatering as required (unless otherwise noted); legal, offsite disposal of spoils, waste materials, or unused materials; coordination with City and Franchise Utility personnel; coordination with property owners if necessary, clean up; sealing of masonry and concrete joints, and all other work required to complete the project and restore the areas of construction to their preconstruction condition.

All excavation on this project shall be unclassified and there shall be no additional payment for materials encountered.

SCHEDULE A – DEMOLITION/PREPARATION/CONTROLS

Bid Item #1 Mobilization

Mobilization shall include the establishment of facilities on the project site and the movement of personnel, construction equipment and supplies to the project site or to the vicinity of the project site in order to enable the Contractor to begin work on the contract. The cost of all bonds and insurance for the project will also be considered part of this item. Mobilization will be measured as a lump sum item. **This pay item shall encompass mobilization costs for the entire project.**

Partial payments of the bid for Mobilization will be as follows. The adjusted contract amount for construction items as used below is defined as the total contract amount less the bid for Mobilization.

- When 1% of the adjusted contract amount for construction items is earned, 50% of the mobilization lump sum bid will be paid. Previous payment under this item will be deducted from this amount.
- When 5% of the adjusted contract amount for construction items is earned, 75% of the mobilization lump sum bid will be paid. Previous payment under this item will be deducted from this amount.
- When 10% of the adjusted contract amount for construction items is earned, 90% of the mobilization lump sum bid will be paid. Previous payment under this item will be deducted from this amount.
- Payment for the remainder of the lump sum bid for Mobilization will be made on the next monthly estimate cycle along with the Final Payment Application.

Bid Item #2 General Site Preparation

General Site Preparation in accordance with NCTCOG Standard Specifications (5th Edition) Item 203.1. Unless indicated otherwise with a specific pay item, all removals of any item within the limits of the project that are not specifically called out to remain will be considered subsidiary to this item. Subsidiary items include, but are not limited to: trees, fences, gates, pavement markers and markings (existing, and temporary), signage, asphalt, gravel, base, headwalls, wingwalls, walls, junction boxes, flumes, manholes, inlets, storm drain culverts and pipes, bollards, pavers, any concrete under pavers in the median, any concrete within the medians, handrails, metal beam guard fence, mow strips, landscaping, entry features, gutter drains, poles, foundations, fire hydrants and associated piping, blocking and valves, lighting poles/fixtures/foundations, conduit (lighting and signal), irrigation facilities, franchise utility markers and/or abandoned franchise utilities, etc.

Any existing improvement shown to remain, which is damaged or destroyed by these operations, shall be replaced at the Contractor's expense.

Measurement and payment shall be based on the lump sum (LS) bid price of general site preparation and shall be full compensation for all labor, materials, and incidentals necessary to complete the work.

Bid Item #3 Unclassified Street Excavation

This work consists of all the required excavation within the limits of the right-of-way and adjacent areas to establish the roadway cross-section, grade and profile as shown on the plans. All excavation is considered unclassified and shall be performed to the lines & grades shown on the construction plans or as directed by the Engineer, in accordance with the NCTCOG Standard Specifications (5th Edition) Item 203.4, and City of Rockwall Special Provision. Any excess excavation may be used on-site for fill, if determined to be clean and suitable, or stockpiled in locations as directed by the Engineer for future use on the project.

Payment shall include the removal and stockpile of all unused excavated materials on adjacent area (as approved and directed by the Engineer), constructing, shaping and finishing of all earthwork involved. This item includes removing unused excavated materials from the job site and disposing it to the proper site.

This is a "Plans Quantity" item and will not be measured unless there are revisions to the scope of work. Payment for work performed and materials furnished related to the unclassified excavation, as provided herein, shall be made per cubic yard (CY) for unclassified excavation and shall be total compensation for furnishing and/or operating all labor, materials, tools, equipment and other incidentals necessary to complete the work.

Bid Item #4 Excavation (Roadway) (TxDOT)

This work consists of all the required excavation within the limits of the right-of-way and adjacent areas to establish the roadway cross-section, grade and profile as shown on the plans. All excavation shall be performed to the lines & grades shown on the construction plans or as directed by the Engineer, in accordance with TxDOT Item 110. Any excess excavation may be used on-site for fill, if determined to be clean and suitable, or stockpiled in locations as directed by the Engineer for future use on the project.

Payment shall include the removal and stockpile of all unused excavated materials on adjacent area (as approved and directed by the Engineer), constructing, shaping and finishing of all earthwork involved. This item includes removing unused excavated materials from the job site and disposing it to the proper site.

This is a "Plans Quantity" item and will not be measured unless there are revisions to the scope of work. Payment for work performed and materials furnished related to the unclassified excavation, as provided herein, shall be made per cubic yard (CY) for unclassified excavation and shall be total compensation for furnishing and/or operating all labor, materials, tools, equipment and other incidentals necessary to complete the work.

Bid Item #5 Traffic Control Plan, Barricades, Detouring, Lights and Watchmen

Barricades, Detouring Lights and Watchmen shall ensure that all placement and location of traffic control and safety devices are in accordance with TMUTCD requirements. Each phase of construction shall be considered substantially complete before commencing the next phase of construction. Considerations for wave this requirement may be submitted to Owner for approval in writing with justification for request.

This item shall also include up to two (2) temporary message boards to be placed on each end of the project one month prior to traffic pattern adjustments. Variable message boards shall be used throughout the entirety of construction with a minimum of one (1) at each limit of construction, SH 66 and Masters Boulevard. Contractor to coordinate message with Owner.

Measurement and payment shall be at the unit price bid lump sum (LS) for all traffic control measures including, but not limited to, signage, barricades, flagmen, and all other measures necessary to ensure public safety. Traffic control facilities shall remain in place until the completion of the project and all permanent signage is installed. Refer also to the Item **SC.17 "BARRICADES, DETOURING LIGHTS AND WATCHMEN"** (Page 185) of these Special Provisions.

Bid Item #6 Remove Existing Reinforced Concrete Pavement (Street)

Bid Item #7 Remove Existing Reinforced Concrete Pavement (Drive/Alley)

Bid Item #8 Remove Existing Reinforced Concrete Pavement (Sidewalk)

This work includes the removal and disposal of existing concrete pavement at the locations and limits shown on the construction plans or as determined by the Engineer, in accordance with the appropriate details and specifications. Concrete to be removed shall be sawed full-depth through the existing reinforcement along even straight lines leaving a clean vertical side, as shown on the plans or as established by the Engineer, in accordance with NCTCOG Standard Specifications (5th Edition) Items 203.1, and City of Rockwall Special Provisions. Any existing improvements beyond these limits, which are damaged or destroyed by the construction shall be re-sawed, removed, and replaced at the Contractor's expense. Once concrete improvements are removed, exposed surfaces that will interface with new concrete pavement shall be roughened to allow adequate bonding of new concrete. Provide dowel bars into end of existing concrete as shown on the City standard details. This operation shall be inspected and approved by the Engineer prior to placement of new concrete. The thickness of the existing concrete is unknown. All spoils shall be removed from the project site at the Contractor's expense.

The removal of concrete curb that is integral to any concrete pavement, which is to be removed as part of this work, shall not be paid for directly but shall be considered subsidiary to this pay item. Also, any concrete removal required for the installation or adjustment of existing utilities is included in this pay item.

Measurement and payment for work performed and materials furnished related to the removal of concrete pavement, as provided herein, shall be made per square yard (SY) and shall be total compensation for furnishing and operating all labor, materials, tools, equipment and other incidentals necessary to complete the work.

Bid Item #9 Remove Existing Brick Pavers

Remove Existing Brick Pavers in accordance with NCTCOG Standard Specifications (5th Edition) Item 203.1. This item consists of the required work and materials for the removal of existing brick pavers as required by the plans and specifications.

Measurement and payment shall be at the unit price bid per square yard (SY) and shall be full compensation for all labor, materials, equipment, tools, and incidentals necessary to complete the removal of existing brick pavers and shall include hauling and legal disposal of the pavers and other materials off site.

Bid Item #10 Removing Concrete (Pav) (TxDOT)

Bid Item #11 Removing Concrete (Sidewalk) (TxDOT)

Bid Item #12 Removing Concrete (Curb and Gutter) (TxDOT)

This work includes the removal and disposal of existing concrete pavement at the locations and limits shown on the construction plans or as determined by the Engineer, in accordance with the appropriate details and TxDOT Item 104. This item consists of the required work and materials for the removal of concrete pavement as required by the plans and specifications.

Measurement and payment for work performed and materials furnished related to the removal of concrete pavement, as provided herein, shall be made per square yard (SY) or linear foot (LF) and shall be total compensation for furnishing and operating all labor, materials, tools, equipment and other incidentals necessary to complete the work.

Bid Item #13 Remove Structure (Concrete Wall)

Remove concrete walls in accordance with TxDOT Item 496. This item consists of the required work and materials for the removal of concrete walls as required by the plans and specifications.

Measurement and payment shall be at the unit price bid per linear foot (LF) and shall be full compensation for all labor, materials, equipment, tools, and incidentals necessary to complete the removal of concrete walls and shall include hauling and legal disposal of all materials off site.

Bid Item #14 Remove and Replace Existing Wall

Remove stone and/or brick walls in accordance with TxDOT Item 496. This item consists of the required work and materials for the removal of existing walls, salvaging of materials, and reconstruction of the wall to existing condition as required by the plans and specifications.

Measurement and payment shall be at the unit price bid per linear foot (LF) and shall be full compensation for all labor, materials, equipment, tools, and incidentals necessary to complete the removal and replacement of walls.

Bid Item #15 Remove Existing Headwall

Remove existing headwalls in accordance with TxDOT Item 496. This item consists of the required work and materials for the removal of existing headwalls required by the plans and specifications.

Measurement and payment shall be at the unit price bid per each (EA) and shall be full compensation for all labor, materials, equipment, tools, and incidentals necessary to complete the removal and replacement of existing headwalls and shall include hauling and legal disposal of all materials off site.

Bid Item #16 Remove Existing 5' Inlet
Bid Item #17 Remove Existing 10' Inlet
Bid Item #18 Remove Existing 15' Inlet
Bid Item #19 Remove Existing 20' Inlet

Remove Existing Inlet in accordance with NCTCOG Standard Specifications (5th Edition) Item 203.1. This item consists of the required work and materials for the removal of existing inlet as required by the plans and specifications.

Measurement and payment shall be at the unit price bid per each (EA) and shall be full compensation for all labor, materials, equipment, tools, and incidentals necessary to complete the removal of existing inlets and shall include hauling and legal disposal of the structure and other materials off site.

Bid Item #20 Remove Existing 18" Storm Drain Pipe (RCP)
Bid Item #21 Remove Existing 21" Storm Drain Pipe (RCP)
Bid Item #22 Remove Existing 24" Storm Drain Pipe (RCP)
Bid Item #23 Remove Existing 27" Storm Drain Pipe (RCP)
Bid Item #24 Remove Existing 30" Storm Drain Pipe (RCP)
Bid Item #25 Remove Existing 33" Storm Drain Pipe (RCP)
Bid Item #26 Remove Existing 36" Storm Drain Pipe (RCP)
Bid Item #27 Remove Existing 42" Storm Drain Pipe (RCP)
Bid Item #28 Remove Existing 60" Storm Drain Pipe (RCP)

This item shall include the removal and disposal of existing storm drain pipe (RCP) at the locations shown in the plans in accordance with NCTCOG Standard Specifications (5th Edition) Item 203.1. This item also includes removing and disposing of existing embedment material from the trench. The trench shall be backfilled with appropriate backfill material and shall be compacted as for a new storm drain line installation.

Measurement and payment shall be at the contract unit price per linear foot (LF) of storm drain pipe (RCP) that is removed and disposed. Payment shall be total compensation for the furnishing of all labor, materials, tools, equipment, and incidentals necessary to complete the work and shall include hauling and legal disposal of the storm pipe and other materials off site.

Bid Item #29 Remove and Install New 5' Inlet Top
Bid Item #30 Remove and Install New 10' Inlet Top

Inlet top adjustments shall be constructed in accordance with the details as shown in the plans and NCTCOG Standard Specifications (5th Edition) Items 203.1 and 502.12.

Measurement and payment shall be at the unit price bid per each (EA) inlet top, complete in place, including excavation, form work, concrete reinforcing, curing, protection, labor, backfill/embedment, and incidentals necessary to perform the work.

Bid Item #31 Remove Existing Sanitary Sewer Manhole

Remove Existing Sanitary Sewer Manholes in accordance with the details as shown in the plans and NCTCOG Standard Specifications (5th Edition) Item 203.1.

Measurement and payment shall be at the unit price bid per each (EA) manhole and shall be full compensation for all labor, materials, equipment, tools, and incidentals necessary to complete the removal of sanitary sewer manholes and shall include hauling and legal disposal of all materials off site.

Bid Item #32 Relocate Existing Mailbox (Wood/Metal Post)

Bid Item #33 Relocate Mailbox (Brick)

Bid Item #34 Relocate Mailbox (Stone)

This bid item shall consist of removing, temporarily relocating, and replacing mailboxes in locations shown on the plans or as determined by the Engineer or homeowner. Temporarily relocate mailboxes on approved temporary mailbox assemblies during relocation. Relocate mailboxes to permanent locations upon completion of construction operations. Contractor shall catalog and keep photographs of all faces of the mailboxes on the project in order to replace any damages mailboxes to existing condition. Contractor shall replace the existing mailboxes to a condition equal or better than in existing condition if damaged during the construction, to the satisfactory of the City and property owner.

Measurement and payment for work performed and materials furnished related to removal and replacement of existing mailboxes of type shall be on the basis of the price bid per each (EA) and shall be full compensation for installing mailboxes in permanent locations, materials, labor, equipment, tools, and incidentals necessary to complete the work. Removing existing mailbox assemblies and relocating to temporary locations will not be paid for directly but will subsidiary to pertinent items.

Bid Item #35 Remove and Replace Existing Fence

Remove and replace Existing Fence in accordance with NCTCOG Standard Specifications (5th Edition) Item 203.1. This item consists of the required work and materials for the removal of existing inlet as required by the plans and specifications.

Measurement and payment shall be at the unit price bid per linear foot (LF) and shall be full compensation for all labor, materials, equipment, tools, and incidentals necessary to complete the removal of existing inlets and shall include hauling and legal disposal of the structure and other materials off site.

Bid Item #36 Remove Existing Tree (Various Sizes)

Bid Item #37 Remove Existing Bushes (Various Sizes)

This bid item shall consist of removing and disposing of trees/bushes of various sizes specified in locations as shown on the plans or as determined by engineer, in accordance with NCTCOG Standard Specifications (5th Edition) Item 201.1 and 203.1, and City of Rockwall Special Provisions. Any tree or bush labeled for removal in the plans shall be confirmed with the City prior to removal. Removal shall include all pruning, felling, stump removal, root ball removal, mulching of leaves and limbs necessary to safely remove any tree approved for removal. Once the entire root ball of the tree has been removed the hole must be filled with on-site fill material that is free of debris, i.e, rocks, branches, trash, etc. The fill material must be placed in 8-inch lifts to the proposed grade and compacted to 95% of the standard proctor maximum dry density. Once work has commenced on the removal of a tree approved for removal, it shall not cease until the remnants of the tree are completely mulched and lawfully removed from the project site. All debris and mulch from the removal of trees shall be disposed of in a legal manner. All trees designated to be preserved shall be protected to the limits of the canopy and no parking, driving or moving of equipment in this area will be permitted. If pruning of protected trees is required, they shall be trimmed as directed by the Engineer.

Measurement and payment for work performed and materials furnished related to removal and disposal of trees of various sizes shall be on the basis of the price bid per each (EA) and shall be full compensation for operating all labor, equipment, tools, and incidentals necessary to complete the work.

Measurement and payment for work performed and materials furnished related to removal and disposal of bushes of various sizes shall be on the basis of the price bid per each (EA) and shall be full compensation for operating all labor, equipment, tools, and incidentals necessary to complete the work.

Bid Item #38 Solid Block Sodding

This bid item shall include furnishing and complete in place installation of sod in disturbed areas as required by construction and shall conform to the requirements of NCTCOG Standard Specifications (5th Edition) Items, 201.1 and 204.5. Sod shall match existing grass type. Contractor shall remove all roots, debris, and rocks larger than 1½". The placement of minimum of 4" of acceptable topsoil below sodding is subsidiary to this bid item. Grades shall be uniform, with even cross sections to prevent ponding or uneven grades. The sodded areas shall be watered and maintained, including mowing, by the Contractor until the planted areas are established and have been accepted by the City.

Topsoil shall be placed in accordance with NCTCOG Standard Specifications (5th Edition) Item 204.2 "Topsoil." **"Topsoil" must be approved as "Topsoil" prior to use by Owner.**

Topsoil shall consist of friable surface soil reasonably free of grass, roots, weeds, sticks, stones, or foreign materials. The topsoil shall consist of sandy loam, with soil particles with the following percentages: clay: 0-25; silt: 25-50; sand: 50-70; decomposed organic matter: 5-10. The clay content is optional. The soil shall have a soil acidity range between a pH 5.0 to pH 7.0. The soil salinity shall not exceed millimhos per centimeter at 25°C (as described by USDA Circular No. 982).

Measurement and payment for work performed and materials furnished related to furnish and installation of block sod for disturbed areas shall be on the basis of the price bid per square yard (SY) and shall be full compensation for material, labor, equipment, tools, and incidentals necessary to complete the work.

Bid Item #39 Irrigation

This item consists of the repair of existing irrigation along the project limits. It is the responsibility of the Contractor to determine the extent of adjustment and/or repair required as part of construction prior to submitting a bid. Any irrigation adjacent to the roadway corridor that is damaged or moved during construction shall be repaired or replaced in such a way that the original coverage is obtained.

Measurement and payment shall be at the unit price bid lump sum (LS) for installation, adjustment and/or repair of irrigation. The price shall be full compensation for the furnishing of all labor, material, tools, equipment and incidentals necessary to complete the work.

Bid Item #40 Temporary Erosion, Sedimentation, and Water Pollution Prevention and Control, SWPPP, NOI

This pay item shall consist of furnishing, installing, maintaining and removing erosion controls throughout the duration of the project in accordance with the Texas Commission on Environmental Quality's (TCEQ) permitting procedures and requirements for construction projects that disturb one (1) or more acres and in accordance with NCTCOG Standard Specifications (5th Edition) Item 202 and City of Rockwall Special Provisions. Under the Texas Pollution Discharge Elimination System (TPDES) general construction permit TXR 150000, the operator with control of construction plans and specifications (Owner) and the operator with day-to-day operational control (Contractor) are required to obtain a permit for the discharge of storm water runoff. The Contractor shall be required to prepare and implement a single comprehensive site-specific Storm Water Pollution Prevention Plan (SW3P) for the entire construction site. The Contractor shall: (1) sign the SW3P, (2) submit an NOI for City and Contractor, and (3) post a site notice as part of the permit. The SW3P must describe and ensure the implementation of best management practices that will be used to reduce, to the maximum extent possible, the pollutants and storm water discharges associated with the construction activity and ensure compliance with the terms and conditions of the permit. The SW3P must clearly indicate which operator is responsible for satisfying each shared requirement of the SW3P. The SWP3 shall be subject to approval by the Owner and must be retained on-site during the term of the construction. Notice must be posted if the SW3P is retained off-site.

A Texas Registered Professional Engineer must sign and seal the Erosion Control Plan (ECP) submitted as part of the SW3P. The Contractor shall submit a Notice of Termination for City and Contractor upon completion of the project.

This work shall also include the installation and maintenance of:

- (a) Sediment filter rolls;
- (b) Construction entrances;
- (c) Inlet protection (GeoCurve or P2 Filter);
- (d) Rock filter dams;
- (e) Any additional erosion control measures required by the SW3P.

Measurement and payment shall be made on the basis of the price bid per lump sum (LS) for storm water pollution prevention plan & erosion control, complete in place, maintenance & removal. This includes any necessary revisions to the Erosion Control Plan throughout the term of construction and the installation, sequencing, and maintenance of structural control measures throughout the duration of construction. Payment shall be total compensation for furnishing all labor, materials, tools, and equipment necessary to complete the work. Payment shall be evenly prorated throughout the term of construction on a monthly basis, based on amount bid and time bid.

Bid Item #41 Trench Safety

This item shall consist of the required trench safety measures in accordance with NCTCOG Specification 107.20.3, **SC.43** "TRENCH SAFETY SYSTEM" (Page 221) and Technical Specification 31 41 33 "Trench Safety Requirements." The Contractor shall be responsible for properly designed trench safety systems to be used for any type of subsurface condition found on this project. The furnishing of soil information by the Owner, or the lack of soil information in no way relieves the Contractor of his obligation.

Bid Item #42 Stabilized Construction Entrance

This item shall consist of all work associated with providing Stabilized Construction Entrances/Exits for the project and shall be performed in accordance with NCTCOG Item 201.11, plans, details, and general notes.

This item shall include, but not be limited to: grading, filter fabric, stone, maintenance, and all appurtenances.

Contractor shall be responsible to locate construction entrances/exits and include the construction entrances/exits in the SWPPP for the project.

Additional construction entrances deemed necessary by the Contractor shall be subsidiary to this item.

Measurement and payment shall be for the unit price bid per each (EA) Stabilized Construction Entrance/Exit and shall be full compensation for all labor, materials, and incidentals necessary to complete the work.

SCHEDULE B – PAVING

Bid Item #43 6-inch Thick, Reinforced Concrete Pavement (Side Street)

Bid Item #44 8-inch Thick, Reinforced Concrete Pavement (Side Street)

This item shall consist of 10" concrete pavement. All work shall be performed in accordance with plans and project details. Pavement must obtain a compressive strength of 3,600 psi within 28 days.

This item shall be governed by all applicable provisions of NCTCOG Standard Specifications (5th Edition) Item 303 and City of Rockwall standards/details. Reference the City of Rockwall's "Special Provisions" to the NCTCOG and NCTCOG Standard Specifications 303.2, 303.3, 303.5, and 303.8.

Measurement and payment shall be per square yard (SY) and shall include all labor, material, equipment, tools, preparation and incidentals necessary to complete the work.

Bid Item #45 10-inch Thick, Reinforced Concrete Pavement (Roadway and Side Street Approach)

This item shall consist of 6" concrete pavement. All work shall be performed in accordance with plans and project details. Pavement must obtain a compressive strength of 3,600 psi within 28 days.

This item shall be governed by all applicable provisions of NCTCOG Standard Specifications (5th Edition) Item 303 and City of Rockwall standards/details. Reference the City of Rockwall's "Special Provisions" to the NCTCOG and NCTCOG Standard Specifications 303.2, 303.3, 303.5, and 303.8.

Measurement and payment shall be per square yard (SY) and shall include all labor, material, equipment, tools, preparation and incidentals necessary to complete the work.

Bid Item #46 Conc Pvmnt (Jointed - CPCD) (10") (TxDOT)

This item shall consist of 10" concrete pavement. All work shall be performed in accordance with TxDOT Item 528, plans, details, and general notes.

Measurement and payment shall be per square yard (SY) and shall include all labor, material, equipment, tools, preparation and incidentals necessary to complete the work.

Bid Item #47 6-inch Thick, Lime Stabilized Subgrade (36#/SY)

This pay item shall consist of all work associated with providing 6 inches Lime Stabilized Subgrade for the project and shall be performed in accordance with NCTCOG 301.2, plans, details, and general notes. Reference the City of Rockwall's "Special Provisions" to the NCTCOG and NCTCOG Standard Specifications 301.2.

Refer to Geotechnical Engineering Study prepared by CMJ Engineering on October 2024 for additional information for material and compaction requirements.

Measurement and payment shall be for the unit price bid per square yard (SY) of Lime Stabilized Subgrade and shall be full compensation for all labor, materials, and incidentals necessary to complete the work.

Bid Item #48 Hydrated Lime

This pay item shall consist of all work associated with providing Hydrated Lime for the project and shall be performed in accordance with NCTCOG Item 301.2, plans, details, and general notes. Reference the City of Rockwall's "Special Provisions" to the NCTCOG and NCTCOG Standard Specifications 301.2.

Measurement and payment shall be for the unit price bid per ton (TON) of Hydrated Lime and shall be full compensation for furnishing the material; for all freight involved; for all unloading, storing handling, and mixing; and for all labor, equipment, fuels, tools, and incidentals necessary to complete the work.

Bid Item #49 Lime Trt (Exst Matl) (6") (TxDOT)

This pay item shall consist of all work associated with providing 6 inches Lime Stabilized Subgrade for the project and shall be performed in accordance with TxDOT Item 260, plans, details, and general notes.

Refer to Geotechnical Engineering Study prepared by CMJ Engineering on October 2024 for additional information for material and compaction requirements.

Measurement and payment shall be for the unit price bid per square yard (SY) of lime treated existing material and shall be full compensation for all labor, materials, and incidentals necessary to complete the work.

Bid Item #50 Lime (Hydrated Lime (Slurry)) (TxDOT)

This pay item shall consist of all work associated with providing lime for the project and shall be performed in accordance with TxDOT Item 260, plans, details, and general notes.

Measurement and payment shall be for the unit price bid per ton (TON) of lime and shall be full compensation for furnishing the material; for all freight involved; for all unloading, storing handling, and mixing; and for all labor, equipment, fuels, tools, and incidentals necessary to complete the work.

Bid Item #51 6-inch Thick, Driveway (Concrete)

6-inch Thick, Driveway (Concrete) in accordance with the plan and specification requirements to include all labor, materials, tools, and incidentals necessary to install concrete driveways. The Contractor shall conform to the NCTCOG Standard Specifications (5th Edition) Item 305.2. Pavement must obtain a compressive strength of 3,600 psi within 28 days.

Contractor shall notify all businesses and residents in writing 48 hours prior to removal of their driveways.

Driveways identified for removal and reconstruction are specifically called out on the plans. Prior to removal, Contractor shall document each driveway within the project limits. Driveways shall be constructed to original or better condition and to satisfaction of the Owner. Any damage to reconstructed driveways prior to final acceptance shall be the responsibility of the Contractor.

All work shall conform to the applicable standard and special project specifications.

Measurement and payment shall be in accordance with NCTCOG Standard Specifications (5th Edition) Item 305.2 at the unit price bid per square yard (SY).

Bid Item #52 6-inch Thick, Reinforced Concrete Driveway Approach

Bid Item #53 10-inch Thick, Reinforced Concrete Driveway Approach

6-inch/10-inch Thick, Reinforced Concrete Driveway Approach in accordance with the plan and specification requirements to include all labor, materials, tools, and incidentals necessary to install driveways. The Contractor shall conform to the NCTCOG Standard Specifications (5th Edition) Item 305.2. Pavement must obtain a compressive strength of 3,600 psi within 28 days.

Measurement shall include driveway area as depicted on the plans with limits of pay located at the back of sidewalk. Payment shall be a price per square yard (SY) of reinforced concrete driveway approach. Such price shall include all materials, labor, and supervision for the completed construction.

Bid Item #54 7-inch Thick (Max), Reinforced Concrete Pavement (Alley)

7-inch Thick, Reinforced Concrete Pavement (Alley) in accordance with NCTCOG Standard Specifications (5th Edition) Item 303.

7-inch thickness shall be used for bid purposes only. Actual thickness of alley section will vary. Refer to thicknesses and limits as shown on plans and details.

Measurement and payment shall be per square yard (SY) and shall include all labor, material, equipment, tools, preparation and incidentals necessary to complete the work.

Bid Item #55 7-inch Thick, Reinforced Concrete Alley Approach

7-inch Thick, Reinforced Concrete Alley Approach in accordance with NCTCOG Standard Specifications (5th Edition) Item 303.

Concrete alley approach shall be 7-inch thick and in accordance with NCTCOG Standard Specifications (5th Edition) Item 303 and NCTCOG detail.

Measurement and payment shall be per square yard (SY) and shall include all labor, material, equipment, tools, preparation and incidentals necessary to complete the work.

Bid Item #56 4-inch Thick, Reinforced Concrete Sidewalk

4-inch Thick, Reinforced Concrete Sidewalk in accordance with the plan and specification requirements to include all labor, materials, tools, and incidentals necessary to install sidewalks. The Contractor shall conform to the NCTCOG Standard Specifications (5th Edition) Item 305.2.

Sidewalks identified for removal and reconstruction are specifically called out on the plans. Prior to removal, Contractor shall document the sidewalk within the project limits. Sidewalks shall be constructed to original or better condition and to satisfaction of the Owner. Any damage to reconstructed sidewalks prior to final acceptance shall be the responsibility of the Contractor.

All work shall conform to the applicable standard and special project specifications.

The re-use of salvaged surface and base materials may be considered upon request and as approved by the Owner. It is the Contractor's responsibility to provide sufficient evidence to support the re-use of salvaged materials.

Measurement and payment shall be in accordance with NCTCOG Standard Specifications (5th Edition) Item 305.2 at the unit price bid per square yard (SY) of exposed aggregate concrete sidewalk.

Bid Item #57 Conc Sidewalk (4") (TxDOT)

This pay item shall consist of all work associated with constructing sidewalk for the project and shall be performed in accordance with TxDOT Item 531 "Sidewalks".

Measurement and payment shall be per square yard (SY) and shall include all labor, material, equipment, tools, preparation and incidentals necessary to complete the work.

Bid Item #58 TxDOT Type 2 Curb Ramp
Bid Item #59 TxDOT Type 5 Curb Ramp
Bid Item #60 TxDOT Type 7 Curb Ramp
Bid Item #61 TxDOT Type 10 Curb Ramp
Bid Item #62 TxDOT Type 10 Curb Ramp (No Detectable)

Curb ramp in accordance with the plan and specification requirements to include all labor, materials, tools, and incidentals necessary to install curb ramps. The Contractor shall conform to TxDOT Item 531 "Sidewalks".

Truncated dome plating to be used in place of all specified detectable warning surfaces.

Measurement and payment shall be bid per each (EA) curb ramp and shall be full compensation for all labor, materials, and incidentals necessary to complete the work.

Bid Item #63 Concrete Median Nose

This pay item shall consist of all work associated with constructing concrete median noses for the project and shall be performed in accordance with NCTCOG Item 305.3, plans, details, and general notes. Reference the City of Rockwall's "Special Provisions" to the NCTCOG and NCTCOG Standard Specifications 305.3.

Measurement and payment shall be per each (EA) and shall include all labor, material, equipment, tools, preparation and incidentals necessary to complete the work.

Bid Item #64 Concrete Median

This pay item shall consist of all work associated with constructing concrete medians for the project and shall be performed in accordance with NCTCOG Item 305.3, plans, details, and general notes. Reference the City of Rockwall's "Special Provisions" to the NCTCOG and NCTCOG Standard Specifications 305.3.

Measurement and payment shall be per square yard (SY) and shall include all labor, material, equipment, tools, preparation and incidentals necessary to complete the work.

Bid Item #65 Concrete Steps

This pay item shall consist of all work associated with constructing concrete medians for the project and shall be performed in accordance with NCTCOG Item 802.1, plans, details, and general notes.

Measurement and payment shall be per square foot (SF) and shall include all labor, material, equipment, tools, preparation and incidentals necessary to complete the work.

Bid Item #66 10-inch Thick Colored Textured Concrete

This pay item shall consist of all work associated with constructing sidewalk integral walls for the project and shall be performed in accordance with TxDOT Item 528 "Colored Textured Concrete and Landscape Pavers".

Measurement and payment shall be per square yard (SY) and shall include all labor, material, equipment, tools, preparation and incidentals necessary to complete the work.

Bid Item #67 6"-36" Sidewalk Integral Wall
Bid Item #68 6"-24" Sidewalk Integral Wall

This pay item shall consist of all work associated with constructing sidewalk integral walls for the project and shall be performed in accordance with TxDOT Item 529 "Concrete Curb, Gutter, and Combined Curb and Gutter".

Measurement and payment shall be per linear foot (LF) and shall include all labor, material, equipment, tools, preparation and incidentals necessary to complete the work.

Bid Item #69 Retaining Wall

This pay item shall consist of all work associated with constructing sidewalk integral walls for the project and shall be performed in accordance with TxDOT Item 423 "Retaining Walls".

Measurement and payment shall be per linear foot (LF) and shall include all labor, material, equipment, tools, preparation and incidentals necessary to complete the work.

Bid Item #70 Street Light Foundation

Street light foundation shall be for installation of street light foundations as shown on the plans and details in accordance with TxDOT Item 416 "Drill Shaft Foundations."

Measurement and payment shall be at the unit price bid per each (EA) street light foundation and shall be full compensation for all labor, materials, and equipment necessary to complete this pay item.

SCHEDULE C – PAVEMENT MARKINGS AND SIGNAGE

Bid Item #71 Type I (W) Sld 8" (90 Mil)

Bid Item #72 Type I (W) Sld 12" (90 Mil)

Bid Item #73 Type I (W) Sld 24" (90 Mil)

Bid Item #74 Type I (W) Arrow (TxDOT)

Bid Item #75 Type I (W) Word (TxDOT)

Bid Item #77 4" Round (W) Ceramic Non-Reflective Button

Bid Item #78 4" Square Clear/Red Acrylic Reflective Button

Bid Item #79 4" Round (Y) Ceramic Non-Reflective Button

Bid Item #80 4" Square Yellow/Yellow Acrylic Reflective Button

Pavement Markings shall be furnished and installed as shown on the plans and details in accordance with TxDOT Item 666 "Retroreflectorized Pavement Markings" and TxDOT Item 672 "Raised Pavement Markers".

Measurement and payment shall be at the unit price bid per linear foot (LF) or each (EA) and shall be full compensation for all labor, material, and equipment necessary to complete these pay items.

Bid Item #76 Signage

The work under this item shall be performed in accordance with City and MUTCD standards. This work shall include all necessary labor materials to furnish and install all new standard signs, supports, foundations, and assemblies at the locations shown in plans and deemed necessary by the Owner. All additional signage required during traffic control shall be considered subsidiary to Bid Item 4: "Traffic Control Plan, Barricades, Signs & Related Devices, Implementation & Maintenance". New street name blade shall also be furnished and installed if they are within the limits of construction and require relocation.

Prior to installation of new signage, Contractor shall stake locations of proposed signs for Owner and Engineer approval.

Existing signage to be removed shall be salvaged and returned to the Owner.

Measurement and payment shall be bid per lump sum (LS) and shall be full compensation for all labor, materials, and incidentals necessary to complete the work.

SCHEDULE D – DRAINAGE

Bid Item #81 18-inch Reinforced Concrete Pipe (RCP) (Class III)

Bid Item #82 24-inch Reinforced Concrete Pipe (RCP) (Class III)

Bid Item #83 30-inch Reinforced Concrete Pipe (RCP) (Class III)

Bid Item #84 36-inch Reinforced Concrete Pipe (RCP) (Class III)

Bid Item #85 42-inch Reinforced Concrete Pipe (RCP) (Class III)

Bid Item #86 48-inch Reinforced Concrete Pipe (RCP) (Class III)

Bid Item #87 54-inch Reinforced Concrete Pipe (RCP) (Class III)

Bid Item #88 60-inch Reinforced Concrete Pipe (RCP) (Class III)

Bid Item #89 5'x2' Reinforced Concrete Box (RCB) (Class III)

Bid Item #90 5'x3' Reinforced Concrete Box (RCB) (Class III)

Bid Item #91 6'x3' Reinforced Concrete Box (RCB) (Class III)

This work includes the construction of all reinforced concrete pipe (RCP) and reinforced concrete box (RCB) at the locations shown on the construction plans or as determined by the Engineer, in accordance with the appropriate details and specifications, including NCTCOG Standard Specifications (5th Edition) 501.6 and 508.3 and City of Rockwall Special Provision. Backfill and embedment shall be Class "C" in accordance with NCTCOG Standard Specifications (5th Edition) Item 504 "Open Cut – Backfill". All RCP/RCB storm drain shall be Class III as indicated on the plans. All bends shall be pre-fabricated. Ram-nek joint material shall be used for all joints, unless approved otherwise by the Engineer. This work shall include trench excavation, preparation and shaping of bedding, transporting of pipe, jointing, connections to existing and/or proposed improvements and structures, embedment, backfill, and temporary pavement repair, if necessary.

Measurement and payment for work performed and materials furnished related to the construction of RCP/RCB storm drain pipe, as provided herein, shall be made on the basis of the price bid per linear foot (LF), and shall be total compensation for furnishing and/or operating all labor, materials, tools, equipment and other incidentals necessary to complete the work.

Bid Item #92 Concrete Headwall

This pay item shall consist of all work associated with constructing Concrete Headwalls for the project and shall be performed in accordance with TxDOT Item 466 "Headwalls and Wingwalls".

Measurement and payment shall be per each (EA) and shall include all labor, material, equipment, tools, preparation and incidentals necessary to complete the work.

Bid Item #93 Standard Curb Inlet (5')

Bid Item #94 Standard Curb Inlet (10')

Bid Item #95 Standard Curb Inlet (15')

Bid Item #96 Standard Curb Inlet (20')

Bid Item #97-#102 Standard Curb Inlet (Various Size and Depth)

Curb Inlets shall be constructed in accordance with the details as shown in the plans and NCTCOG Standard Specifications (5th Edition) Item 502.12.

Measurement and payment shall be at the unit price bid per each (EA) standard curb inlet at all depths, complete in place, including excavation, form work, concrete reinforcing, curing, protection, labor, backfill/embedment, and incidentals necessary to perform the work.

Bid Item #103 3'x3' Standard Drop Inlet

Drop Inlets shall be constructed in accordance with the details as shown in the plans and NCTCOG Standard Specifications (5th Edition) Item 502.12.

Measurement and payment shall be at the unit price bid per each (EA) drop inlet, complete in place, including excavation, form work, concrete reinforcing, curing, protection, labor, backfill/embedment, and incidentals necessary to perform the work.

Bid Item #104 Alley Curb Inlet Under Pavement (15')

Bid Item #105-#107 Alley Curb Inlet Under Pavement (Various Size and Depth)

Curb inlets under pavement shall be constructed in accordance with the details as shown in the plans and TxDOT Item 465.

Measurement and payment shall be at the unit price bid per each (EA) curb inlet under pavement at all depths, complete in place, including excavation, form work, concrete reinforcing, curing, protection, labor, backfill/embedment, and incidentals necessary to perform the work.

Bid Item #108 4'x4' Standard Square Manhole

Bid Item #109 5'x5' Standard Square Manhole

Bid Item #110 6'x6' Standard Square Manhole

Bid Item #111 7'x4' Junction Box

Bid Item #112 7'x7' Junction Box

Bid Item #113 8'x3' Junction Box

Bid Item #114 8'x5' Junction Box

Bid Item #115 8'x6' Junction Box

Standard Square Manhole and Junction Box shall be constructed in accordance with NCTCOG Standard Specifications (5th Edition) Item 502.12, "Structures" and as shown in the plan documents. Contractor to submit shop drawing, signed and sealed by a licensed professional engineer in the State of Texas, for all non-standard size junction box designs for Owner approval.

Measurement and payment shall be at the unit price bid per each (EA) manhole/junction box installed, at all depths, complete in place, including excavation, form work, concrete reinforcing, curing, protection, labor, backfill/embedment, and incidentals necessary to perform the work.

Bid Item #116 Riprap

This pay item shall consist of all work associated with constructing riprap for the project and shall be performed in accordance with TxDOT item 432, plans, details, and general notes.

Measurement and payment shall be per cubic yard (CY) and shall include all labor, material, equipment, tools, preparation and incidentals necessary to complete the work.

SCHEDULE E – WATER

Bid Item #117 Lower Existing Water Line

Bid Item #118 Temporary Water Service

This pay item shall consist of all work associated with lowering existing water line and constructing temporary water service for the project and shall be performed in accordance with plans, details, and general notes.

Measurement and payment shall be per each (EA) and shall include all labor, material, equipment, tools, preparation and incidentals necessary to complete the work.

SCHEDULE F – SANITARY SEWER

Bid Item #119 8 inch AWWA C900 DR-25 Sewer Pipe (Trenchless Method by Pipe Bursting)

8 inch AWWA C900 DR-25 Sewer Pipe_Sewer Pipe (Trenchless Method by Pipe Bursting) shall be for the construction to lines and limits as shown on plans, details and specifications. Refer to Technical Specifications 33 05 22 "Rehabilitation by Pipe Bursting" for additional information.

Measurement and payment shall at the unit price bid per linear foot (LF) of pipe installed measured along the centerline of the sewer from centerline to centerline of manholes. Payment shall be full compensation for all labor, materials, equipment, monitoring and incidentals necessary to complete the work. The bid price shall also include all cost associated with any bypass pumping or other measures necessary to complete the work.

Bid Item #120 Controlled Low Strength Material (CLSM) for Utilities

This item includes all labor, equipment, and materials necessary for placement of Controlled Low-Strength Material as embedment material for the water and wastewater lines as shown in the plans or as directed by the City's Inspector. CLSM embedment associated with existing utilities shall also be covered by this bid item. Use of this bid item in the event where the embedment of an existing utility is disturbed and cannot be properly recompacted, shall be at the sole discretion of the City's Inspector. The bid price shall include all incidental work and materials and all other items described in accordance with Technical Specification 03 34 13. The quantity show in the proposal is approximate. Measurement and payment for this item shall be on a cubic yard basis.

Bid Item #121 Sanitary Sewer Service Installation (Pipe Bursting)

Sanitary Sewer Service Installation (4 inch) in accordance with NCTCOG Standard Specifications (5th Edition) Items 502.10 and 501.17. All resident services shall be 4" PVC (SDR-35) gravity pipe. Contractor and Owner shall determine actual location of wastewater line service during construction.

Measurement and payment shall be at the unit price bid per each (EA) for all materials, labor, tools, equipment and incidentals necessary to complete the work. Pavement removal and replacement shall be considered subsidiary. The bid price shall also include all cost associated with work performed by a licensed plumber on private property.

Bid Item #122 Sanitary Sewer Manhole (48-inch diameter) (Complete In Place)

Sanitary Sewer Manhole in accordance with NCTCOG Standard Specifications (5th Edition) Item 502.1. Sanitary sewer manholes shall be installed at the locations shown on the plans in accordance with the plan details. Manholes shall be installed with 30" rings & lids.

Measurement and payment shall be in accordance with NCTCOG Standard Specifications (5th Edition) Item 502.1.6 "Measurement and Payment of Manholes". Payment shall include costs associated with vacuum testing and liner (Technical Specification 33 39 60). The bid price shall also include all cost associated with any bypass pumping or other measures necessary to complete the work while allowing existing improvements to remain functional and in service.

Bid Item #123 Connect Prop. PVC to Exist. Sanitary Sewer Pipe

This item includes all labor, equipment, and materials necessary for a connection to an existing sanitary sewer pipe. The bid price shall include all excavation and disposal of excavated soil; plugging of the existing influent wastewater mains; connecting proposed wastewater line to proposed manhole; making modifications to the existing invert and benches; replacing the existing ring and cover; protection of existing structures and utilities; property restoration; clean-up; and any incidental work and materials not otherwise provided for in these specifications.

Payment for this item shall be per each completed manhole passing the vacuum test.

SCHEDULE G – TRAFFIC SIGNAL

Bid Item #124 – Bid Item #137 Traffic Signal Improvements

Governing specifications for the traffic signal improvements at the intersection of the Project.
All specifications applicable to traffic signal equipment and construction for this project are identified as TxDOT Standard Specifications: Adopted by the Texas Department of Transportation September 1,2024.
Standard specifications are incorporated into the contract by reference.

Item 618	Conduit
Item 620	Electrical Conductors
Item 680	Highway Traffic Signals
Item 684	Traffic Signal Cables
Item 687	Pedestal Pole Assemblies
Item 688	Pedestrian and Vehicle Detectors
Item 690	Maintenance of Traffic Signals and Illumination

TxDOT Special Provisions

Item 6008	Radar Vehicle Detection System for Signalized Intersection Control
Item 6013	Preparation of Existing Ground Boxes and Manholes

ALTERNATE A – FLEXIBLE BASE

Bid Item #138 6-inch Thick, Lime Stabilized Subgrade (36#/SY)

Reference bid item description from Bid Item #47.

Bid Item #139 Hydrated Lime

Reference bid item description from Bid Item #48.

Bid Item #140 Unclassified Street Excavation

Reference bid item description from Bid Item #3.

Bid Item #141 8-inch Thick, Flexible Base (Type A) (Grade 1 or 2)

This pay item shall consist of all work associated with providing flexbase for the project and shall be performed in accordance with TxDOT item 247, plans, details, and general notes.

This item shall only be used at the direction of the Owner.

Measurement and payment shall be for the unit price bid per square yard (SY) of flexbase complete in place, to the depth required and shall be for full compensation for all necessary equipment, water, labor, materials, and supervision to install flexible base and geogrid. Excavation is subsidiary to this item.

TECHNICAL SPECIFICATIONS

DIVISION 01 – GENERAL REQUIREMENTS

01 45 16.16 Hydrostatic Testing and Disinfection

DIVISION 31 - CONCRETE

03 34 13 Controlled Low Strength Material

DIVISION 31 - EARTHWORK

31 23 33 Trenching, Backfilling and Compaction

31 41 33 Trench Safety Requirements

DIVISION 33 – UTILITIES

33 05 22 Rehabilitation by Pipe Bursting

33 05 44 Settlement Monitoring

33 11 10 Ductile Iron Fittings

33 34 05 Bypass Pumping of Existing Sewer Systems

33 39 60 Epoxy Liners for Sanitary Sewer Structures

SECTION 01 45 16.16

HYDROSTATIC TESTING AND DISINFECTION

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes

1. Provide testing and disinfection for water line as described in this Section and elsewhere in the Contract Documents.

1.2 REFERENCES

A. Reference standards cited in this specification refer to the current reference standard published at the time of the latest revision date logged at the end of this specification, unless a date is specifically cited.

1. American Water Works Association (AWWA)
 - a. AWWA M23 PVC Pipe – Design and Installation
 - b. AWWA C651 Disinfecting Water Mains

B. Definitions

1. Makeup Water – Quantity of water to be pumped into the pipe necessary to maintain the specified test pressure after the pipe has been filled with water and any air expelled.

1.3 ADMINISTRATIVE REQUIREMENTS

A. Payment:

1. Contractor shall not be required to pay for water associated with initial disinfecting, filling, and pressure testing water lines.
 - a. Contractor shall be provided, at no cost, water to perform the procedures listed above once and only once. If initial testing fails, Contractor shall be responsible for purchasing any additional water required for retesting from the Owner at published rates.
 - b. The pressure test and disinfection shall be scheduled in such a way so that the water utilized for the pressure test can also be used in conjunction with the disinfection process

1.4 SUBMITTALS

A. Submittals shall be in accordance with City requirements.

B. All submittals shall be approved by the Engineer or the Owner prior to delivery.

1.5 ACTION SUBMITTALS/INFORMATIONAL SUBMITTALS

A. Contractor shall be responsible for submitting a hydrostatic testing and disinfection plan to the Engineer for approval prior to construction.

1. This plan shall be submitted in conjunction with the pipe submittal.
2. Disinfection plan shall detail the methods and schedule for cleaning and shall include a detailed description of cleaning procedures, pigging entry and exit ports if applicable, control of water, and disposal.

B. Test Reports

1.6 CLOSEOUT SUBMITTALS [NOT USED]

1.7 MAINTENANCE MATERIAL SUBMITTALS [NOT USED]

1.8 QUALITY ASSURANCE [NOT USED]

1.9 DELIVERY, STORAGE, AND HANDLING

A. Calcium Hypochlorite

1. The material should be stored in a cool, dry, and dark environment to minimize deterioration.

1.10 FIELD CONDITIONS [NOT USED]

1.11 WARRANTY [NOT USED]

PART 2 - PRODUCTS

2.1 CHLORINATION FOR DISINFECTION

A. Calcium Hypochlorite in granular form conforming to ANSI/AWWA B300

1. Must contain approximately 65 percent available chlorine by weight.

B. Liquid Chlorine, conforming to ANSI/AWWA B301

PART 3 - EXECUTION

3.1 GENERAL

A. Once pipe has been laid and backfilled according to the Contract Documents, the pipe shall be subjected to a hydrostatic pressure test by raising the pressure to the required test pressure.

1. The Contractor may install plugs and bulkheads at intermediate locations for the purposes of testing shorter lengths of pipe.

B. Contractor shall be required to disinfect the pipeline in accordance with AWWA C651. Contractor shall be responsible for insuring that all criteria set forth in C651 are met.

C. Perform hydrostatic test on PVC pipe in accordance with AWWA M23 as well as the pipe Supplier's recommendations.

D. The duration of the hydrostatic test shall be for two (2) hours.

E. Test pressure shall be as specified in this Section.

3.2 PERMISSIBLE MAKEUP WATER

A. Measure make up water required for the section of pipe being tested. Makeup water is the volume of water pumped into the test section of pipe necessary to maintain the specified test pressure after the pipe has been filled with water and the air expelled.

B. Allowable makeup water shall not exceed criteria set forth in AWWA M23.

C. Contractor shall either utilize a meter to calculate amount of makeup water used, or use drums with a known quantity of water which can be used to calculate amount of water added to pipeline.

3.3 TESTING AND DISINFECTION PROCEDURE:

- A. Inspect materials to be used to ensure their integrity.
- B. Prevent contaminating materials from entering the water main during storage and construction.
- C. Remove, by flushing or other means, those materials that may have entered the water main.
- D. Perform a hydrostatic test.
 - 1. Hydrostatically test the pipe after backfill over the test section of pipe has been completed for seven days.
 - 2. Slowly fill the line with water and vent all air from the pipeline during filling.
 - a. Expel all air from the pipe before applying the specified test pressure. Provide taps in the line to expel air from high points where air valves are not provided. These taps must be made by the pipe manufacturer and approved by the Engineer. Tightly plug the tap after tests are complete. Include the cost for these taps in the Contract Price.
 - b. After filling the line, flush the line for a sufficient period to help move the air to the release valves or other outlets.
 - 3. Stop leaks before continuing with the test.
- E. Chlorinate any residual contamination that may remain and flush the chlorinated water from the main. Any chlorinated water that is discharged from the main shall be discharged in accordance with Paragraph 3.08.
- F. Protect the existing distribution system from backflow caused by hydrostatic test disinfection procedure.
- G. Document that an adequate level of chlorine contacted each pipe to provide disinfection.
- H. Determine the bacteriological quality by laboratory test after disinfection.
- I. Connect the approved new water main to the active distribution system.

3.4 PREVENTATIVE AND INSPECTION MEASURES:

- A. Heavy particulates generally contain bacteria and prevent even very high chlorine concentrations from contacting and killing these organisms.
- B. Keeping pipe dry and clean.
 - 1. Openings in the pipeline shall be closed with watertight plugs when pipe laying is stopped.
 - 2. The lubricant used in the installation of sealing gaskets shall be suitable for use in potable water and shall not contribute odors.
 - 3. If dirt enters the pipe during storage or installation, it shall be removed and the interior surface swabbed with a 1 to 5 percent hypochlorite disinfecting solution.
- C. Connection to the existing distribution system.
 - 1. Water required to fill the new main for disinfection and flushing shall be supplied through a temporary connection between the distribution system and the new main.
 - 2. The temporary connection shall include an appropriate cross-connection control device.

- a. As an alternate, a permanent connection to the existing distribution system may be permitted at the sole discretion of the Owner provided a new valve is placed at the connection point.
- b. Do not test against an existing valve in the existing system unless approved by the Owner.

3.5 PURGING

A. Purging may be accomplished by passing an appropriate sized poly-pig(s) through the pipe or by flushing. If Contractor elects to utilize poly-pigs he shall be responsible of locating launching and receiving pits. Pits shall be shown on the pipe shop drawings.

B. Flushing Method

1. Prepare the main by installing blow-offs at appropriate locations, of sufficient sizes and numbers, and with adequate flushing to achieve a minimum velocity in the main of 2.5 feet per second.
 - a. Minimum blow-off sizes for various main sizes are as follows:
 - 1) 4-inch through 8-inch main – ¾-inch blow-off
 - 2) 10-inch through 12-inch main – 1-inch blow-off
 - 3) 16-inch and greater main – 2-inch blow-off
 - b. Flushing shall be subject to the following limitations:
 - 1) Limit the volume of water for flushing to 3 times the volume of the water main.
 - 2) Do not unlawfully discharge chlorinated water.
 - 3) Do not damage private property.
 - 4) Do not create a traffic hazard.
 - c. Once flushing is complete:
 - 1) Corporations stops used for flushing shall be plugged.

C. Poly-Pig Method

1. The poly-pig shall be inserted in the new conduit at the location where the new conduit is connected to the active distribution system.
2. Where expulsion of the poly-pig is required through a dead-ended conduit, the Contractor shall make every effort to prevent back flow of the purged water into the conduit after passage of the pig. Backwater re-entry into the pipe can be prevented by the temporary installation of mechanical joint bends and pipe joints to provide a riser out of the trench.
3. After passage of the poly-pig, flushing of all backwater from the pipe, and satisfactory test results, the Contractor shall secure the test location openings and then proceed with disinfection.

3.6 HYDROSTATIC TEST

A. General

1. The hydrostatic pump shall be connected to a system where the amount of leakage can be determined by measurement or gauge. The test pressure shall be maintained over the entire test period. The leakage shall be determined by comparing the quantity of water in the measuring system at the beginning of the test and quantity of water at the end of the test. The difference in these quantities shall be the leakage.
 - a. An alternate method is to add water to the measuring system during the test. At the end of the test, the quantity of water added shall be the leakage.

2. If the tests indicate a leakage in excess of the acceptable rate, the Contractor shall be required to find and repair the leak. Even if the test requirements are met, all apparent leaks shall be stopped.
- B. Test Pressure
 1. Maximum of 225 psi at the lowest elevation of the test section.
 2. Minimum of 150 psi at the highest elevation of the test section

3.7 DISINFECTION

- A. The Continuous-feed method or slug method must be used unless it is stated otherwise in the Contract Specifications.
 1. Continuous-Feed
 - a. At a point no more than ten (10) feet downstream of the beginning of the new conduit, water entering the new conduit shall receive a dose of chlorine such that the water shall have not less than 25 mg/L (ppm) free chlorine. Chlorine application shall not cease until the entire conduit is filled with heavily chlorinated water. Approximately 35 pounds of Calcium Hypochlorite (65% available chlorine) is required in 100,000 gallons of water to produce 25 mg/L (ppm) Chlorine concentration.
 - b. The chlorinated water shall be retained in the conduit for at least 24 hours, during which time all valves and hydrants in the section treated shall be operated in order to disinfect the appurtenances. Every effort shall be made to prevent the flow of chlorinated water into conduits in active service. At the end of the 24-hour period, the treated water in all portions of the conduit shall have a residual of at least 10 mg/L (ppm) free chlorine.
 2. Slug
 - a. At a point no more than ten (10) feet downstream of the beginning of the new conduit, water entering the new conduit shall receive a dose of chlorine such that the water shall have not less than 100 mg/L (ppm) free chlorine. Approximately 125 pounds of Calcium Hypochlorite (65% available chlorine) is required in 100,000 gallons of water to produce 100 mg/L (ppm) Chlorine concentration.
 - b. The Chlorine shall be applied continuously and for a sufficient period to develop a solid column, or slug, of chlorinated water that will, as it moves through the main, expose all interior surfaces to a concentration of approximately 100 mg/l for a least 3 hours. As chlorinated water flows past fittings and valves, related valves and hydrants shall be operated so as to disinfect appurtenances and pipe branches. Every effort shall be made to prevent the flow of chlorinated water into conduits in active service. If at any time the free chlorine drops below 50 mg/l, the flow shall be stopped; chlorination equipment shall be relocated to the head of the slug; and, as flow resumes, chlorine shall be applied to restore the free chlorine in the slug to not less than 100 mg/l.
- B. The Contractor shall install and remove all pump-in, blow-off and sampling points.
- C. Water from the existing system or other approved source shall be made to flow at a constant rate in the new main.

D. The heavily chlorinated water shall then be flushed from the conduit and disposed in a manner meeting the requirements set out in Article 3.08.

E. The chlorine residual shall be tested prior to flushing operations.

3.8 HEAVILY CHLORINATED WATER

A. For any discharge of water in which the chlorine residual exceeds 0.1-mg/L (ppm), including draining of potable water from waterlines for repairs or tie-ins, flushing of potable waterlines, or discharge of chlorinated water used for testing of potable waterlines, the Contractor shall do one of the following:

1. Allow the water shall remain in the new water conduit until the chlorine residual is less than 0.1-mg/L (ppm).

2. Evacuate the water into water trucks

3. Discharge into an existing sanitary sewer system, or an approved storage facility (such as a detention pond until the chlorine residual is 0.1-mg/L (ppm) or less),

a. The heavily chlorinated water shall not be disposed of into the storm sewer system. After the specified chlorine residual is obtained, less than 0.1-mg/L (ppm), the water may then be discharged into the storm sewer system or utilized by the Contractor.

4. Treat the water with Sodium Bisulfite or another dechlorination chemical (Sulfur Dioxide, Sodium Sulfite, Sodium Thiosulfate, or Ascorbic Acid) or method appropriate for potable water and approved by the Engineer until the chlorine residual is reduced to 0.1-mg/L (ppm) or less.

B. The requirement for discharge of heavily chlorinated water is found in the TPDES General Permit to Authorize the Discharge of Storm Water and Certain Non-Storm Water Discharges from Regulated Construction Activities within the State of Texas.

C. Prior to any discharge of water, including draining of potable water from waterlines for repairs or tie-ins, flushing of potable waterlines, or discharge of chlorinated water used for testing of potable waterlines, the Contractor shall complete a letter including the language of the attached "SAMPLE DISCHARGE LETTER" in Article 3.11 of this Specification, and submit the letter to the City for review and submission to Region 4 of the Texas Commission on Environmental Quality. This letter must be submitted to the TCEQ via certified mail at least 72 hours prior to any discharge of potable water.

D. If a fish kill occurs associated with the construction activities:

1. Immediately alter activities to prevent further fish kills.

2. Immediately notify Owner.

3. Collect and classify fish in accordance with TCEQ requirements.

4. Coordinate with Owner to properly notify TCEQ.

5. Be responsible for fines assessed.

3.9 CONTRACTOR REQUIREMENTS

A. The Contractor shall prepare the conduit for disinfection activities and secure same after chlorination is complete.

1. This shall consist of furnishing all equipment, material and labor to satisfactorily prepare the conduit for disinfection. The Contractor shall also be required to provide adequate provisions for sampling.

2. The Contractor shall make all necessary taps into the pipe to accomplish chlorination of a new line

3. After satisfactory completion of the disinfection operation, the Contractor shall remove surplus pipe at the chlorination and sampling points, plug the remaining pipe, backfill, and complete all appurtenant work necessary to secure the conduit.

3.10 SAMPLING

- A. Microbiological sampling shall be done prior to connecting the new conduit into the existing distribution system in accordance with AWWA C651 Disinfecting Water Mains and as described herein.
 1. Samples shall be tested in accordance with *Standard Methods for the Examination of Water and Wastewater*.
- B. Unless otherwise specified, the Contractor shall inject chlorine disinfectant into the conduit and monitor the solution.
- C. The contractor shall be responsible for taking water samples from a suitable tap (not through a fire hydrant) for analysis by the Owner's testing laboratory.
 1. The sample(s) shall be transported by City staff to the laboratory at 9:00 AM on Tuesdays and Thursdays. Samples may not be taken earlier than 3:00 PM on the day prior to delivery. The Owner's inspector shall notify the Contractor of the results.
 2. Samples for bacteriological analysis shall be collected in sterile bottles treated with sodium thiosulfate.
 3. At least one sample shall be collected from every 1,000-linear-feet of new water conduit, plus one set from the end of the line and at least one set from each branch. If trench water has entered the new conduit during construction or, if in the opinion of the City inspector, excessive quantities of dirt or debris have entered the new conduit, samples shall be taken at intervals of approximately 200-linear-feet.
 4. Two samples will be required to be taken. The first sample shall be taken a minimum of 24 hours after chlorination. The second sample shall be taken 24 hours after the first sample.
- D. Unsatisfactory test results shall require a repeat of the disinfection process and resampling as required above until a satisfactory sample is obtained.
 1. In the event there are three (3) unsatisfactory test results from the same sampling point, the Contractor must flush the new water main and re-take samples until a satisfactory sample is obtained.

3.11 SAMPLE DISCHARGE LETTER

[INSERT DATE]

Tony Walker
Region 4, Regional Director
Texas Commission on Environmental Quality
2309 Gravel Drive
Fort Worth, Texas 76118-6951

Re: Potable Water Line Repair and Associated Discharge

Dear Mr. Walker:

On or about _____, [CONTRACTOR] is {scheduled to conduct repairs} OR {conducted repairs} to a City of Rockwall ("City") potable water line. During and following the repair activities, the [CONTRACTOR] {will be discharging} OR {discharged} potable water. In accordance with the TCEQ's Enforcement Initiation Criteria ("EIC," Revision 14, effective Dec. 1, 2012), "a violation may not be addressed via NOV or NOE, or Order against a regulated entity for the discharge of potable water, if proper and complete notice (as required by rule/statute/permit) is provided to the appropriate TCEQ regional office and other requirements are met. Please consider this letter proper and complete notice as required by the EIC. The following information is provided for your information:

- 1) The repair {will be} OR {was} conducted at [INSERT LOCATION]
- 2) The following steps {will be} OR {were} taken to minimize the environmental impact of the discharge
 - a) [LIST ANY STEPS TO BE TAKEN.]
- 3) This discharge is unavoidable due to proper maintenance and/or servicing of the water system and all practicable measures {will be} OR {were} taken to address discharge activities.

Please contact me if you have any questions regarding this matter.

Sincerely,

[CONTRACTOR]

END OF SECTION

SECTION 03 34 13

CONTROLLED LOW STRENGTH MATERIAL (CLSM)

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes

1. Controlled low strength material (CLSM) for use in the following:
 - a. Flowable backfill.

B. Related Specification Sections include but are not necessarily limited to

1. Bidding Requirements, Contract Forms, and Conditions of the Contract.
2. General and Special Specifications.

1.2 PRICE AND PAYMENT PROCEDURES [NOT USED]

1.3 REFERENCES

A. Reference Standards

1. Reference standards cited in this specification refer to the current reference standard published at the time of the latest revision date logged at the end of this specification, unless a date is specifically cited.
2. American Society for Testing and Materials (ASTM):
 - a. C 31 - Standard Practice for Making and Curing Concrete Test Specimens in the Field.
 - b. C 33 - Standard Specification for Concrete Aggregates.
 - c. C 39 - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens.
 - d. C 143 - Standard Test Method for Slump of Hydraulic Cement Concrete.
 - e. C 231 - Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method.
 - f. C 260 - Standard Specification for Air-Entraining Admixtures for Concrete.
 - g. C 618 - Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete.
 - h. D 1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lb/ft³).

1.4 ADMINISTRATIVE REQUIREMENTS [NOT USED]

1.5 SUBMITTALS

A. Submittals shall be in accordance with NCTCOG Item 105.3.

B. All submittals shall be approved by the Engineer or the Owner prior to delivery and/or fabrication for specials.

1.6 ACTION SUBMITTALS/INFORMATIONAL SUBMITTALS

A. Product Data

1. Submit data completely describing products.

B. Shop Drawings

1. Submit full mix details, including mix design calculations for mix proposed for use.

C. Test and Evaluation Reports

1. Sieve Analysis

- a. Submit sieve analyses of fine and coarse aggregates being used. Resubmit at any time there is a significant change in grading of materials.

2. Trial Batch Test Data

- a. Submit data for each test cylinder.
b. Submit data that identifies mix and slump for each test cylinder.

1.7 CLOSEOUT SUBMITTALS [NOT USED]

1.8 MAINTANENCE MATERIAL SUBMITTALS [NOT USED]

1.9 QUALITY ASSURANCE

A. Preconstruction Testing

1. Compression Testing

- a. Test eight (8) cylinders, four (4) at three (3) days and four (4) at 28 days.

2. Slump Test

B. Field Samples

1. Not less than three (3) cylinder specimens will be tested for each 150 cubic yards of controlled low strength material and not less than three (3) specimens for each half day's placement

1.10 DELIVERY, STORAGE, AND HANDLING [NOT USED]

1.11 FIELD [SITE] CONDITIONS [NOT USED]

1.12 WARRANTY [NOT USED]

PART 2 - PRODUCTS

2.1 CONTROLLED LOW STRENGTH MATERIAL (CLSM)

A. Performance / Design Criteria

1. Total calculated air content

- a. Not less than 8.0 percent or greater than 12.0 percent.

2. Minimum unconfined compressive strength

- a. Not less than 50 pounds per square inch measured at 28 days.

3. Maximum unconfined compressive strength

- a. Not greater than 150 pounds per square inch measured at 28 days.
b. The long-term strength (90 days) shall be limited to 200 psi such that material could be re-excavated with conventional excavation equipment in the future if necessary.

4. Wet density

- a. No greater than 132 pounds per cubic foot.

5. Color

- a. No coloration required unless noted.
b. Submit dye or other coloration means for approval.

B. Materials

1. Portland cement

- a. Type II low alkali portland cement as specified in the plans.

2. Fly ash

- a. Class F fly ash in accordance with ASTM C 618.
3. Admixture
 - a. Air entraining admixture in accordance with ASTM C 260.
4. Fine aggregate
 - a. Concrete sand (does not need to be in accordance with ASTM C 33).
 - b. No more than 12 percent of fine aggregate shall pass a No. 200 sieve
 - c. No plastic fines shall be present.
5. Coarse aggregate
 - a. Pea gravel no larger than 3/8 inch.

C. Mixes

1. Suggested design mix

Material	Weight	Specific Gravity	Absolute Volume Cubic Foot
Cement	30 pounds	3.15	0.15
Fly Ash	300 pounds	2.30	2.09
Water	280 pounds	1.00	4.54
Coarse Aggregate	1,465 pounds	2.68	8.76
Fine Aggregate	1,465 pounds	2.68	8.76
Admixture	4-6 ounces	-	2.70
TOTAL	3,543 pounds	-	27.00

PART 3 - EXECUTION

3.1 PRE-CONSTRUCTION TESTING

A. Preparing Trial Batch

1. After mix design has been accepted by Engineer, have trial batch of the accepted mix design prepared by testing laboratory acceptable to Construction Manager.
2. Prepare trial batches using specified cementitious materials and aggregates proposed to be used for the Work.
3. Prepare trial batch with sufficient quantity to determine slump, workability, consistency, and to provide sufficient test cylinders.

B. Trial Batch Test Cylinders

1. Prepare test cylinders in accordance with ASTM C 31 with the following exceptions:
 - a. Fill the concrete test cylinders to overflowing and tap sides lightly to settle the mix.
 - b. Do not rod the concrete mix.
 - c. Strike off the excess material.
2. Place test cylinders in a moist curing room. Exercise caution in moving and transporting the cylinders since they are fragile and will withstand only minimal bumping, banging, or jolting without damage.

3. Do not remove the test cylinder from mold until the cylinder is to be capped and tested.
4. The test cylinders may be capped with standard sulfur compound or neoprene pads:
 - a. Perform the capping carefully to prevent premature fractures.
 - b. Use neoprene pads a minimum of 1/2 inch thick, and 1/2 inch larger in diameter than the test cylinders.
 - c. Do not perform initial compression test until the cylinders reach a minimum age of 3 days.

C. Compression Testing

1. Test 4 test cylinders at 3 days and 4 at 28 days in accordance with ASTM C 39 except as modified herein:
 - a. The compression strength of the 4 test cylinders tested at 28 days shall be equal to or greater than the minimum required compression strength, but shall not exceed maximum compression strength.
 - b. If the trial batch tests do not meet the Specifications for strength or density, revise and resubmit the mix design, and prepare additional trial batch and tests. Repeat until an acceptable trial batch is produced that meets the Specifications.
 - c. All the trial batches and acceptability of materials shall be paid by the Contractor.
 - d. After acceptance, do not change the mix design without submitting a new mix design, trial batches, and test information.

D. Slump Testing

1. Determine slump in accordance with ASTM C 143 with the following exceptions:
 - a. Do not rod the concrete material.
 - b. Place material in slump cone in one semi-continuous filling operation, slightly overfill, tap lightly, strike off, and then measure and record slump.

3.2 INSTALLATION

- A. Prior to placement, soils located below controlled low strength material placement shall be scarified to a depth of 8 inches, uniform moisture conditioned to or above the optimum moisture content and compacted to a minimum of 95 percent relative compaction in accordance with ASTM D 1557 at the direction of the Engineer.
- B. Place controlled low strength material by any method which preserves the quality of the material in terms of compressive strength and density:
 1. Limit lift heights of CLSM placed against structures and other facilities that could be damaged due to the pressure from the CLSM, to the lesser of four (4) feet or the lift height indicated on the Drawings. Do not place another lift of CLSM until the last lift of CLSM has set and gained sufficient strength to prevent lateral load due to the weight of the next lift of CLSM.
 2. The basic requirement for placement equipment and placement methods is the maintenance of its fluid properties.
 3. Transport and place material so that it flows easily around, beneath, or through walls, pipes, conduits, or other structures.
 4. Use a slump of the placed material greater than nine (9) inches, and sufficient to allow the material to flow freely during placement:
 - a. After trial batch testing and acceptance, maintain slump developed during testing during construction at all times within plus or minus one (1) inch.

5. Use a slump, consistency, workability, flow characteristics, and pumpability (where required) such that when placed, the material is self-compacting, self densifying, and has sufficient plasticity that compaction or mechanical vibration is not required.
6. When using as embedment for pipe take appropriate measures to ensure line and grade of pipe.

3.3 FIELD QUALITY CONTROL

A. General

1. Make provisions for and furnish all material for the test specimens and provide manual assistance to assist the Engineer in preparing said specimens.
2. Be responsible for the care of and providing curing condition for the test specimens.

B. Tests

1. During the progress of construction, the Owner will have tests made to determine whether the controlled low strength material, as being produced, complies with the requirements specified hereinbefore. Testing shall be in accordance with Section 01 40 00 – QUALITY REQUIREMENTS.
2. Test cylinders
 - a. Prepare test cylinders in accordance with ASTM C 31 with the following exceptions:
 - 1) Fill the concrete test cylinders to overflowing and tap sides lightly to settle the mix.
 - 2) Do not rod the concrete mix.
 - 3) Strike off the excess material.
3. Place the cylinders in a safe location away from the construction activities. Keep the cylinders moist by covering with wet burlap, or equivalent. Do not sprinkle water directly on the cylinders.
 - a. Do not perform initial compression test until the cylinders reach a minimum age of 3 days.
4. Not less than 3 cylinder specimens will be tested for each 150 cubic yards of controlled low strength material and not less than 3 specimens for each half day's placement:
 - a. Test 1 cylinder at 3 days and 2 at 28 days in accordance with ASTM C 39 except as modified herein.
 - b. The compression strength of the cylinders tested at 28 days shall be equal to or greater than the minimum required compression strength, but shall not exceed maximum compression strength.

END OF SECTION

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SECTION 33 23 33
TRENCHING, BACKFILLING AND COMPACTION

PART 1 - GENERAL

A. SUMMARY

B. Section Includes

1. Furnish all labor, materials, equipment and incidentals necessary to perform all trenching for pipelines and appurtenances, including drainage, bedding, filling, backfilling, disposal of surplus material, and restoration of trench surfaces and easements.

C. Related Specification Sections include but are not necessarily limited to

1. Section 31 41 33 - Trench Safety Requirements

1.2 REFERENCES

- A.** Reference standards cited in this specification refer to the current reference standard published at the time of the latest revision date logged at the end of this specification, unless a date is specifically cited.
- B.** All excavation, trenching, and related sheeting, bracing, etc., shall comply with the requirements of OSHA excavation safety standards (29 CFR Part 1926.650 Subpart P), and H.B. 1569 of the 71st Regular Legislative Session.
- C.** Wherever soil compaction requirements are referred to herein it shall refer to Standard Proctor Density as determined by ASTM D 698.

1.3 ADMINISTRATIVE REQUIREMENTS [NOT USED]

1.4 SUBMITTALS

- A.** Submittals shall be in accordance with City standard specifications.
- B.** All submittals shall be approved by the Engineer or the Owner prior to delivery.

1.5 ACTION SUBMITTALS/INFORMATIONAL SUBMITTALS

- A.** Prior to the start of work, the Contractor is required to submit his/her proposed method of backfilling and compaction to the Engineer for review.
- B.** If soil boring logs indicate the presence of groundwater within the proposed trench area, a Groundwater Dewatering Plan shall be submitted outlining how groundwater will be removed.
1. Groundwater Dewatering Plan shall be performed by and sealed by a licensed engineer in the State of Texas.
 2. Contractor shall assume all responsibility for the adequacy of the methods, materials, and equipment employed.
- C.** When pipe embedment is crushed stone, provide Embedment Compaction Plan signed and sealed by a licensed engineer in the State of Texas.

1.6 CLOSEOUT SUBMITTALS [NOT USED]

1.7 MAINTENANCE MATERIAL SUBMITTALS [NOT USED]

1.8 QUALITY ASSURANCE [NOT USED]

1.9 DELIVERY, STORAGE, AND HANDLING [NOT USED]

1.10 FIELD CONDITIONS [NOT USED]

1.11 WARRANTY [NOT USED]

PART 2 - PRODUCTS [NOT USED]

PART 3 - EXECUTION

3.1 TRENCH EXCAVATION

- A. Trench excavation shall include material of every description and of whatever substances encountered, regardless of the methods or equipment required to remove the material. Pavement shall be cut with a saw, wheel or pneumatic chisel along straight lines before excavating.
1. All excavation shall be made in open trenches.
 2. The length of open trench shall be related closely to the rate of pipe laying.
 3. Remove from the excavation all materials which the Engineer may deem unsuitable for backfilling.
- B. The Contractor shall strip and stockpile topsoil from grassed areas crossed by trenches. At the Contractor's option, topsoil may be otherwise disposed of and replaced, when required, with approved topsoil of equal quality.
- C. While excavating and backfilling is in progress, traffic shall be maintained, and all utilities and other property protected as provided in the Agreement.
- D. Trenches shall be excavated to the depth indicated on the Drawings and in widths sufficient for laying the pipe, bracing and for pumping and drainage facilities. The bottom of the excavations shall be firm and dry and in all respects acceptable to the Engineer. Trench width shall be practical minimum, but not less than 12-inches nor more than indicated on the Drawings.
1. If conditions warrant, the Contractor may be ordered to deposit gravel for pipe bedding, or gravel refill for excavation below grade, directly on the bottom of the trench immediately after excavation has reached the proper depth and before the bottom of the trench has become softened or disturbed by any cause whatever.
- E. Excavation and dewatering shall be accomplished by methods which preserve the undisturbed state of subgrade soils. The trench may be excavated by machinery to, or just below, the designated subgrade, provided that material remaining in the bottom of the trench is no more than slightly disturbed. Subgrade soils which become soft, loose, "quick", or otherwise unsatisfactory as a result of inadequate excavation, dewatering or other construction methods shall be removed and replaced by gravel fill as required by the Engineer at the Contractor's expense.

F. Clay and organic silt soils are particularly susceptible to disturbance due to construction operations. When excavation is to end in such soils, the Contractor shall use smooth-edge bucket to excavate the last one foot of depth.

G. Where pipe is to be laid in gravel bedding, the trench may be excavated by machinery to the normal depth of the trench provided that the material remaining in the bottom of the trench is no more than slightly disturbed.

3.2 DISPOSAL OF MATERIALS

A. Refer to City standard specifications.

3.3 SHEETING AND BRACING

A. Furnish, put in place and maintain sheeting and bracing required by Federal, State or local safety requirements to support the sides of the excavation and prevent loss of ground which could endanger personnel, damage or delay the work, or endanger adjacent structures. If the Engineer believes at any point sufficient or proper supports have not been provided, he may order additional supports placed at the expense of the Contractor. Compliance with such order shall not relieve the Contractor from his responsibility for the sufficiency of such supports. Care shall be taken to prevent voids outside of the sheeting, but if voids are formed, they shall be immediately filled and rammed.

B. Where sheeting and bracing is required to support the sides of trenches, the Contractor shall engage a Professional Engineer, licensed in the State of Texas, to design the sheeting and bracing. The sheeting and bracing installed shall be in conformity with the design and certification of this shall be provided by the Professional Engineer.

C. When moveable trench bracing such as trench boxes, moveable sheeting, shoring or plates are used to support the sides of the trench, care shall be taken in placing and moving the boxes or supporting bracing to prevent movement of the pipe, or disturbance of the pipe bedding and the gravel backfill.

1. When installing rigid pipe (R.C., D.I., V.C., etc), any portion of the box extending below mid diameter shall be raised above this point prior to moving the box ahead to install the next pipe. This is to prevent the separation of installed pipe joints due to movement of the box.
2. When installing flexible pipe (Steel, PVC, etc.) trench boxes, moveable sheeting, shoring or plates shall not be allowed to extend below mid-diameter of the pipe. As trench boxes, moveable sheeting, shoring or plates are moved, gravel backfill shall be placed to fill any voids created and the gravel backfill shall be recompact to provide uniform side support for the pipe.

D. The Contractor will be permitted to use steel sheeting in lieu of wood sheeting for the entire job wherever the use of sheeting is necessary. The cost for use of sheeting shall be included in the bid items for trench safety and shall include full compensation for driving, bracing and later removal of sheeting.

E. All sheeting and bracing shall be carefully removed in such manner as not to endanger the construction of other structures, utilities, or property, whether public or private. All voids left after withdrawal of sheeting shall be immediately refilled with gravel backfill by ramming with tools especially adapted to that purpose, or otherwise as directed.

3.4 TEST PITS

- A. The Contractor may be required to excavate test pits for locating underground utilities or structures as an aid in establishing the precise location of new work.
- B. Test pits shall be backfilled as soon as the desired information has been obtained. The backfilled surface shall be maintained in a satisfactory condition for travel until resurfaced as specified.

3.5 DRAINAGE AND DEWATERING

- A. The Contractor shall furnish all materials and equipment and perform all incidental work required to install and maintain the drainage system he proposes for handling groundwater or surface water encountered.
- B. The Contractor shall provide pumping equipment and devices to properly remove and dispose of all water entering trenches and excavations.
 - 1. The subgrade shall be maintained acceptably dry, to a level of five feet below the bottom of the trench, until the facilities to be built therein are completed.
 - 2. Piezometers shall be provided at appropriate locations for verification of dewatering depth.
 - 3. All drainage related work shall be performed without damage to the trench, pavement, pipes, electrical conduits, or other utilities and without damage to public or private property.
- C. The pipe or concrete shall not be laid in water or submerged within 24 hours after being placed. Water shall not flow over new concrete within four days after placement, or as designated on the plans.
- D. In no event shall water rise to cause unbalanced pressure on facilities until the concrete or mortar has set at least 24 hours. The Contractor shall prevent flotation of the pipe by promptly placing backfill.

3.6 EXCAVATION BELOW GRADE AND REFILL

- A. Whatever the nature of unstable material encountered or the groundwater conditions, trench drainage shall be complete and effective.
- B. If the contractor excavates below grade through error or for his own convenience, or through failure to properly dewater the trench, or disturbs the subgrade before dewatering is sufficiently complete, he may be directed by the Engineer to excavate below grade as set forth in the following paragraph, in which case the work of excavating below grade and furnishing and placing the refill shall be performed at his own expense.
- C. If the material at the level of trench bottom consists of fine sand, sand and silt or soft earth which may work into the gravel backfill notwithstanding effective drainage, the subgrade material shall be removed to the extent directed and the excavation refilled with a 6-inch to 12-inch layer of crushed stone No. 67, or as approved by the Engineer, to form a filter layer preserving the voids in the gravel bed of the pipe.
 - 1. The composition and gradation of gravel shall be approved by the Engineer prior to placement.
 - 2. Gravel backfill shall then be placed in 6-inch layers, thoroughly compacted, up to the level indicated in the Drawings.

- D. Trench Geotextile Fabric may be installed in specified locations.
1. Soils other than ML or OH in accordance with ASTM D2487
 - a. Needle punch, nonwoven geotextile composed of polypropylene fibers
 - b. Fibers shall retain their relative position
 - c. Inert to biological degradation
 - d. Resist naturally occurring chemicals
 - e. UV Resistant
 - f. Mirafi 140N by Tencate, or approved equal
 2. Soils Classified as ML or OH in accordance with ASTM D2487
 - a. High-tenacity monofilament polypropylene woven yarn
 - b. Percent open area of 8 percent to 10 percent
 - c. Fibers shall retain their relative position
 - d. Inert to biological degradation
 - e. Resist naturally occurring chemicals
 - f. UV Resistant
 - g. Mirafi FW402 by Tencate, or approved equal

3.7 EMBEDMENT

- A. Embedment for water lines shall be as specified in the Drawings.
- B. The initial layer of embedment placed to receive the pipe shall be brought to the grade and dimensions indicated on the Drawings, and the pipe shall be placed thereon and brought to grade by tamping, or by removal of the slight excess amount of embedment under the pipe. Adjustments to grade shall be made by scraping away or filling with embedment material.
- C. Wedging or blocking up of pipe will not be permitted.
- D. Each pipe section shall have a uniform bearing on the embedment for the full length of the pipe, except immediately at the joint.
- E. All embedment shall extend the full width of the trench bottom.
- F. Embedment shall remain dewatered, in accordance with Section 3.05, until all backfilling is complete.
- G. After the pipe has been laid, jointed and inspected, embedment material shall be brought up in mechanically tamped layers not exceeding eight inches in thickness of loose fill, approximately equal on each side of the pipe, to 12 inches above the top of pipe.
- H. Embedment requirements for sand and crushed stone shall be as follows:
1. Crushed Stone - Embedment shall be compacted to minimum 70% relative density in accordance with ASTM D4253 and D5254.
 - a. Contractor shall submit an Embedment Compaction Plan to the Engineer for approval prior to pipe laying activities. Contractor shall retain an independent geotechnical engineer to help prepare the compaction plan. Plan shall detail the method by which the embedment will be compacted including but not limited to the following:
 - 1) Equipment Used
 - 2) Compaction Process and Anticipated Passes
 - 3) Lift Heights
 - 4) Testing Procedure/Firm

- b. Owner may retain an independent geotechnical engineering firm to visually inspect the pipe embedment compaction during construction and provide a certification that the embedment meets the compaction specifications stated above.
- 1) A qualified representative shall be on-site at a minimum once for every 100 linear feet of pipe that is laid. Representative shall be on-site for a long enough duration each day to observe and certify the embedment placing process.
 - 2) At a minimum, qualified representative shall:
 - a) Confirm lift thickness
 - b) Count number of passes
 - c) Confirm proper equipment is being used
 - d) Confirm aggregate weight
2. Sand - Embedment shall be compacted to minimum 90% of maximum density in accordance with NCTCOG Section 504.5.2.8 Class B-3 and ASTM D 698.

3.8 PIPE LAYING PROVE OUT

- A. A prove out will not be required as part of this project.

3.9 BACKFILLING

- A. As soon as practicable after the initial bedding has been placed and the pipe has been laid and jointed, backfilling shall begin and thereafter be prosecuted expeditiously. Embedment, as specified for the type of pipe installed, shall be placed as shown on the Drawings and as specified in Paragraph 3.07 above.
- B. The remainder of the trench shall be filled per Item 504.6.1. Layers shall not exceed 6-inches in loose measure compacted to 95 percent of maximum density in accordance with ASTM D698. The backfill shall be mounded twelve (12) inches above the existing grade, or as directed.
- C. Where a grass, loam or gravel surface exists prior to excavation, it shall be removed, conserved and replaced to the full original depth as part of the work under the pipe items. In some areas it may be necessary to remove excess material during the clean-up process, so that the ground may be restored to its original level and condition.
- D. To prevent longitudinal movement of the pipe, dumping backfill material into the trench and then spreading will not be permitted until the bedding material has been placed and compacted to a level 1-ft over the pipe.
- E. Backfill shall be brought up evenly on both sides of the pipe. Each layer of backfill material shall be thoroughly compacted by rolling, tamping, or vibrating with mechanical compacting equipment or hand tamping. If rolling is employed, it shall be by use of a suitable roller or tractor, being careful to fill throughout the full width of the trench.
- F. Compaction shall be by use of hand or pneumatic tamping with tools weighing at least 20 pounds. If necessary, sprinkling shall be employed in conjunction with rolling or ramming.

- 1 G. Subject to the approval of the Engineer, fragments of ledge and boulders smaller than
2 four inches may be used in trench backfill providing that the quantity, in the opinion of
3 the Engineer, is not excessive. Rock fragments shall not be placed until the pipe has at
4 least two feet of cover. Small stones and rocks shall be placed in thin layers alternating
5 with earth to ensure that all voids are completely filled. Fill shall not be dropped into
6 the trench in a manner to endanger the pipe. If rock fragments are placed in the backfill
7 material, it will be the Contractor's responsibility to prove to the Engineer that the
8 specified compaction is occurring. If the Engineer's opinion is that the compaction is
9 not achieved, then the Contractor shall remove material that contains rock fragments
10 and replace it with suitable material.
- 11 H. Bituminous paving shall not be placed in backfill unless specifically permitted, in
12 which case it shall be broken up as directed. Frozen material shall not be used under
13 any circumstances.
- 14 I. Water jetting will not be accepted as a means of consolidating/compacting backfill.
- 15 J. Dewatering, per Section 3.05, shall be maintained until backfill is complete.

16 **3.10 RESTORING TRENCH SURFACE**

- 17 A. Where the trench occurs adjacent to paved areas, road shoulders, sidewalks, or in cross-
18 country areas, the Contractor shall thoroughly consolidate the backfill and shall
19 maintain the surface as the work progresses. If settlement takes place, he shall
20 immediately deposit additional backfill to restore the level of the ground.
- 21 B. In paved areas, the edge of the existing pavement to be removed shall be cut along
22 straight lines, and the pavement replaced as indicated on the Drawings.
- 23 C. The surface of any driveway, or any other area, which is disturbed by the trench
24 excavation and which is not a part of the paved road shall be restored by the Contractor
25 to a condition at least equal to that existing before work began.
- 26 D. In sections where the pipeline passes through grassed areas, the Contractor shall, at his
27 own expense, remove and replace the sod, or shall loam and reseed the surface to the
28 satisfaction of the Engineer.
- 29 E. All road surfaces shall be broomed and hose-cleaned immediately after backfilling.
30 Dust control measures shall be employed at all times.

31
32 **END OF SECTION**

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SECTION 31 41 33
TRENCH SAFETY REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Furnish all labor, materials, and equipment and perform all operations to plan, design, construct, install, maintain, monitor, modify as necessary, and remove upon completion, a Trench Safety System as specified herein.
2. The requirements of this Section apply to all trenches which equal or exceed a depth of five (5) feet, measured from the ground surface at the highest side of the trench to the trench bottom.
3. All applicable and non-conflicting portions of Section 31 23 33 – Trenching, Backfilling and Compaction apply as appropriate.

B. Related Specification Sections include but are not necessarily limited to

1. Section 31 41 33 – Trenching, Backfilling and Compaction.

1.2 REFERENCES

A. Reference Standards

1. Reference standards cited in this specification refer to the current reference standard published at the time of the latest revision date logged at the end of this specification, unless a date is specifically cited.
2. Texas Statute: HB 1569, 71st Regular Legislative Session.
3. U.S. Occupational Safety and Health Administration (OSHA) Standards, 29 CFR 1926, Subpart P – Excavations, latest revision at time of construction Agreement execution.

1.3 ADMINISTRATIVE REQUIREMENTS [NOT USED]

1.4 SUBMITTALS [NOT USED]

1.5 ACTION SUBMITTALS/INFORMATIONAL SUBMITTALS

A. Shop Drawings

1. Trench Safety System Plan

1.6 CLOSEOUT SUBMITTALS [NOT USED]

1.7 MAINTENANCE MATERIAL SUBMITTALS [NOT USED]

1.8 QUALITY ASSURANCE [NOT USED]

1.9 DELIVERY, STORAGE, AND HANDLING [NOT USED]

1.10 FIELD CONDITIONS [NOT USED]

1.11 WARRANTY [NOT USED]

PART 2 - PRODUCTS

2.1 GENERAL

- A. All materials and products incorporated into the Trench Safety System shall be suitable for their intended uses; shall meet all design criteria and parameters used by the Trench Safety System designer; and shall meet all applicable requirements of OSHA Standards.

PART 3 - EXECUTION

3.1 PROCEDURES

- A. At least ten (10) Calendar Days prior to execution or any excavation operations, and not more than thirty (30) Calendar Days following the execution date of the construction Agreement, Contractor shall submit a site specific Trench Safety System Conformance Affidavit stating that operations will be conducted in full conformance with the OSHA Standards.
1. The Conformance Letter shall also describe the Trench Safety System techniques proposed to be used on the project.
 2. Specific references to the applicable OSHA Standards sections shall be included for each technique to be used.
- B. The Trench Safety System Plan shall be in writing, site specific and sufficiently detailed and clear to be understandable and usable by all personnel who will be executing, supervising and witnessing the trenching operations. A copy of the Trench Safety System Plan shall be available at the site of trenching operations at all times. A second copy shall be provided to the Engineer for the Owner's records.
- C. If borings and/or detailed geotechnical analyses are required to develop the Trench Safety System Plan, they shall be executed by the Contractor at his cost.
- D. For trenches having depths greater than the various limits given in the OSHA Standards (8, 12 or 20 feet, depending on the techniques used), a site specific protective system shall be designed by a Licensed Professional Engineer experienced in soil mechanics and structural design. The design shall be signed, sealed and dated by the Professional Engineer, and it shall identify those specific locations where the design is applicable.

3.2 METHODS OF PROVIDING FOR TRENCH SAFETY

- A. Protective systems referenced in this Section shall be as defined and described in 29 CFR 1926.652, "Requirements for Protective Systems."

- 1 B. It is the duty, responsibility and prerogative of the Contractor to determine the specific
2 applicability of a proposed Trench Safety System for each field condition encountered
3 on the project. Contractor specifically holds the Owner, Engineer, and any of their
4 designated representatives harmless in any actions resulting from the failure or
5 inadequacy of the Trench Safety System used to complete the project.
- 6 C. Unless otherwise noted on the drawings or excluded below, Sloping/Benching, Trench
7 Shielding with trench boxes, and/or Sheet piling/Shoring/Bracing protective systems may
8 be used on this project.
- 9 D. Restrictions on the use of the various protective systems for this project are as follows:
- 10 1. Sloping or Benching. No Restrictions, except as noted on plans.
- 11 2. Trench Shields/Boxes. No Restrictions.
- 12 3. Sheet piling/Shoring/Bracing. No Restrictions.
- 13

14 **3.3 INSPECTION DUTIES OF CONTRACTOR**

- 15 A. Provide a Competent Person, as defined in the OSHA Standards, to make frequent
16 inspections of the trenching operations and the Trench Safety System in full
17 conformance with the OSHA Standards.
- 18 B. If evidence of a possible cave-in or landslide is apparent, all work in the trench shall
19 immediately cease and not be resumed until all necessary precautions have been taken
20 to safeguard personnel entering the trench.
- 21 C. In an emergency situation which may threaten or affect the safety or welfare of any
22 persons or properties, the Contractor shall act at his discretion to prevent possible
23 damage, injury or loss. Any additional compensation or time extension claimed for
24 such actions shall be considered in view of the cause of the emergency and in
25 accordance with the Agreement.
- 26

27 END OF SECTION

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SECTION 33 05 22

REHABILITATION OF EXISTING WASTEWATER MAIN BY PIPE BURSTING

PART 1 - GENERAL

A. SUMMARY

1. This specification provides the minimum requirements for the trenchless installation of wastewater pipe and consists of furnishing all labor, materials and equipment necessary for the replacement of wastewater mains by pipe bursting. Rehabilitation includes reconnecting existing sewer connections, television inspection of the polyethylene pipe and complete installation in accordance with the contract documents.
2. Related Specification Sections include but are not necessarily limited to
 - a. City Standard Specifications
 - b. Section 33 04 44 – Settlement Monitoring
 - c. Section 33 34 05 – Bypass Pumping of Existing Sewer Systems

1.2 REFERENCES

A. Definitions

1. Pipe bursting replacement is defined as a trenchless method which splits the existing pipe and immediately installs a new polyethylene pipe behind an apparatus which expands the existing wastewater pipe, tees, wyes and couplings into the adjacent ground forming a clear space to insert the new wastewater piping.

B. Reference Standards

1. Reference standards cited in this specification refer to the current reference standard published at the time of the latest revision date logged at the end of this specification, unless a date is specifically cited.
2. ASTM International
 - a. ASTM D1248 – Standard Specification for Polyethylene Plastics Extrusion Materials for Wire and Cable
 - b. ASTM D2122 – Standard Test Method for Determining Dimensions of Thermoplastic Pipe and Fittings
 - c. ASTM D2412 – Standard Test Method for Determination of External Loading Characteristics of Plastic Pipe by Parallel-Plate Loading
 - d. ASTM D3350 – Standard Specification for Polyethylene Plastics Pipe and Fittings Materials
 - e. ASTM D618 – Standard Practice for Conditioning Plastics for Testing
 - f. ASTM D2657 – Standard Practice for Heat Fusion Joining of Polyolefin Pipe and Fittings
 - g. ASTM D3212 – Standard Specification for Joints for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals

1.3 ADMINISTRATIVE REQUIREMENTS [NOT USED]

1.4 SUBMITTALS

- A. Submittals shall be in accordance with City standard specifications.

- B. All submittals shall be approved by the Engineer or the Owner prior to delivery and/or fabrication for specials.

1.5 ACTION SUBMITTALS/INFORMATIONAL SUBMITTALS

A. Product Data

1. Catalog data and manufacturer's technical data showing complete information on material composition, physical properties, and dimensions of new pipe and fittings.
2. Manufacturer's recommendation for handling, storage, and repair of pipe and fittings damaged.

B. Shop Drawings

1. Detailed installation procedure including pipe bursting method to be used and method of construction and restoration of existing sewer service connections. This shall include Detail drawings and written description of the entire construction procedure to install pipe, bypass sewage flow and reconnection of sewer service connections.

C. Certifications and References

1. Certification of workmen training for installing pipe
2. Provide a list of minimum three (3) previous projects completed in the last three years by the Contractor/installer where a wastewater main was successfully rehabilitated using the pipe bursting method to be employed. Include contact names, addresses, and phone numbers of agencies involved.

D. Test and Evaluation Reports

1. Television inspection reports and video made after new pipe installation
2. Low pressure air testing

1.6 CLOSEOUT SUBMITTALS [NOT USED]

1.7 MAINTENANCE MATERIAL SUBMITTALS [NOT USED]

1.8 QUALITY ASSURANCE

- A. The Contractor shall be certified by the manufacturer of the particular pipe bursting system that such firm is a licensed installer of their system. Contractor must provide a letter to the Owner documenting this requirement.

- B. The Contractor shall have a minimum of three (3) years of verifiable experience using the pipe bursting method while meeting the following criteria:

1. A minimum total of 100,000 LF of completed pipe bursting footage
2. A minimum total of 50,000 LF of upsizing where similar sized diameter increases have been successfully completed in pipe diameters of 8-inch to 15-inch
3. A minimum total of 25,000 LF of pipe bursting experience on diameters 18-inch and larger

- C. Personnel performing pipe bursting must be certified by the manufacturer of the pipe bursting system as having successfully completed training in:

1. Operating bursting head
2. Installing proposed replacement pipe
3. Operation and maintenance of all equipment to be used

1.9 DELIVERY, STORAGE, AND HANDLING

- A. Transport, handle and store pipe and fittings as recommended by manufacturer. If new pipe and fittings become damaged before or during installation, it shall be repaired as recommended by the manufacturer or replaced as required by the Engineer at the Contractor's expense, before proceeding further. Deliver, store and handle other materials as required to prevent damage.

1.10 FIELD [SITE] CONDITIONS [NOT USED]

1.11 WARRANTY

- A. A one-year warranty for the pipe shall be included from the Contractor, and shall cover the cost of replacement pipe and freight to project site, should the pipe have any defects in material or workmanship
- B. In addition to the standard pipe warranty, the pipe bursting Contractor shall provide in writing a warranty for a period of one year for all the pipe bursting work including material, installation, and pressure testing at no additional cost to the Owner
- C. Unless otherwise specified, the warranty period shall begin after the Certificate of Acceptance is issued for the Contract

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Replacement pipe shall be high-density polyethylene pipe and meet the applicable requirements of ASTM F714 Polyethylene (PE) Plastic Pipe (SDR-PR) Based on Outside Diameter, ASTM D1248, and ASTM D3350.
- B. Sizes of the insertions to be used shall be as shown on the plans or to renew the sewer to its original or greater than flow capacity.
- C. All pipes shall be made of virgin material. No rework except that obtained from the manufacturer's own production of the same formulation shall be used.
- D. The pipe shall be homogenous throughout and shall be free of visible cracks, holes, foreign material, blisters or other deleterious faults.
- E. Material color shall be white, gray or light colored, suitable for TV inspection.
- F. Unless otherwise specified in the plans or specifications, the minimum wall thickness of the polyethylene pipe shall meet the following:

Depth of Cover (ft.)	Separation Distance from Water Main (ft)	SDR (DIPS HDPE)	Min. Pressure (psi)
< 10	≥ 9	17	100
	< 9	11	160
> 10	As Required	11	160

2.2 TESTS

- A. Tests for compliance with this specification shall be made as specified herein and in accordance with the applicable ASTM Specification. A certificate with this specification shall be furnished, upon request, by the manufacturer for all material furnished under this specification. Polyethylene plastic pipe and fittings may be rejected for failure to meet any requirements of this specification.

PART 3 - EXECUTION

3.1 PRE-BURSTING TELEVISION INSPECTION

- A. The Contractor shall provide for the television inspection for the section or sections of pipe prior to construction as outlined in NCTCOG Item 507.5.2 "Television Inspection."

3.2 SETTLEMENT MONITORING

- A. The Contractor shall provide for settlement monitoring for the section or sections of pipe prior to and during construction as outlined in Technical Specification 33 04 44 "Settlement Monitoring."

3.3 OBSTRUCTION REMOVAL

- A. Identify any point repairs required, such as dropped joints, intruding service connections, collapsed pipe, sags in main or any other obstructions prior to the pipe bursting process. The Contractor shall remove all obstructions to perform pipe bursting operation, as necessary.
- B. The contractor shall notify the Owner for approval to make an excavation after having exhausted all other options to remove any obstruction or retrieve any pipe bursting tool or camera from the wastewater main.

3.4 DIVERSION PUMPING

- A. The Contractor, when and where required, will divert wastewater flows for the cleaning, pipe bursting, television inspection, point repairs, obstruction removals, or other related work in this project as required to complete the work. All works to be done as per as per Section 33 34 05.
- B. The Contractor shall be responsible for continuity of sanitary sewer service to each facility connected to the section of sewer during the execution of the work.
- C. Sewage will not be permitted to backup into buildings at any time. If sewage backup occurs and enters buildings, the Contractor shall be responsible for cleanup, repair, property damage cost and claims.

3.5 INSERTION PITS OR ACCESS PITS

- A. Insertion or access pits shall be efficiently located so that total number of pits are minimized and footage of liner pipe installed in a single pull is maximized. Where possible, use existing manholes and excavations at point repair locations for insertion pits.
- B. To facilitate long insertion runs, intermediate insertion pits may be allowed at the most advantageous location to provide for replacement pipe to be installed in both directions. Pits in areas subject to traffic should be avoided as much as possible. If insertion pits in areas subject to traffic cannot be avoided, the operation shall be limited to one (1) lane of traffic or one-half (1/2) of the roadway, whichever is less.

- C. Insertion pits shall be only as large as required to accommodate the equipment. All pit dimensions and locations shall be approved by the Owner in writing, prior to beginning work.
- D. Manholes may be placed at insertion pit location as directed by the Owner.
- E. In the event the pipe bursting process requires the excavation of an insertion pit, the pipe through the pit shall be bedded in the required bedding material as shown on the plans.

3.6 METHODS FOR NEW PIPE INSTALLATION

- A. The methods approved for rehabilitation of existing sanitary sewers by pipe bursting and installation of new polyethylene pipe are pneumatic, static, and/or hydraulic.

3.7 PIPE BURSTING AND LINER INSERTION

- A. Equipment used to perform the work shall be located away from buildings so as to minimize noise impact. Provide silencers or other devices to reduce machine noise as required to meet requirements.
- B. The Contractor shall install all pulleys, rollers, bumpers, alignment control devices and other equipment required to protect existing manholes, and to protect the pipe from damage during installation. Lubrication may be used as recommended by the manufacturer. Under no circumstances will the pipe be stressed beyond its elastic limit.
- C. The installed pipe shall be allowed the manufacturer's recommended amount of time, but not less than four (4) hours, for cooling and relaxation due to tensile stressing prior to any reconnection of service lines, sealing of the annulus or backfilling of the insertion pit. Sufficient excess length of new pipe, but not less than four (4) inches, shall be allowed to protrude into the manhole to provide for occurrence.
- D. Following the relaxation period, the annular space may be sealed. Sealing shall be made with materials approved by the Engineer and/or his representative and shall extend a minimum of eight (8) inches into the manhole wall in such a manner as to form a smooth, uniform, watertight joint.
- E. The new wastewater pipe shall be placed without damaging the pipe joints or completed pipe sections. Any pipe which has been damaged during installation shall be replaced by the Contractor.

3.8 PIPE JOINING

- A. The polyethylene pipe shall be assembled and joined at the site using the thermal butt-fusion method to provide a leak proof joint in accordance with ASTM F2620. Threaded or solvent-cement joints and connections are not permitted. All equipment and procedures used shall be used in strict compliance with the manufacturer's recommendations. Fusing shall be accomplished by personnel certified as fusion technicians by a manufacturer of polyethylene pipe and/or fusing equipment.

- B. The butt-fused joint shall be true alignment and shall have uniform roll-back-beads resulting from the use of proper temperature and pressure. The joint shall be allowed adequate cooling time before removal of pressure. When cool, all weld beads shall then be removed from both the inside and outside surface such that the joint surfaces shall be smooth. The fused joint shall be watertight and shall have tensile strength equal to that of the pipe. All joints shall be subject to acceptance by the Engineer and/or his representative prior to insertion. All defective joints shall be cut out and replaced at no cost to the Owner. Any section of the pipe with a gash, blister, abrasion, nick, scar or other deleterious fault greater in depth than ten percent (10%) of the wall thickness, shall not be used and must be removed from the site. However, a defective area of the pipe may be cut out and the joint fused in accordance with the procedures stated above. In addition, any section of pipe having other defects such as concentrated ridges, discoloration, excessive spot roughness, pitting, variable wall thickness or any other defect of manufacturing or handling as determined by the Engineer and/or his representative shall be discarded and not used.
- C. Terminal sections of pipe that are joined within the insertion pit shall be connected with a full circle pipe repair clamp. The butt gap between pipe ends shall not exceed one-half (½) inch.

3.9 SERVICE CONNECTIONS

- A. In providing re-connection of existing wastewater services, selected service connection pipe diameter must match existing service with a minimum diameter of 4 inches. Any existing service smaller than 4 inches shall be upsized to a minimum of 4 inches.
- B. All sewer service connections shall be identified, located and excavated prior to the pipe insertion to expedite reconnection. Upon commencement, pipe insertion shall be continuous and without interruption from one manhole to another, except as approved by the Owner. Upon completion of insertion of the new pipe, the Contractor shall expedite the reconnection of services to minimize any inconvenience to the customers.
- C. Mechanical saddles shall be made of polyethylene pipe compound that meets the requirements of ASTM D1248, Class C, have stainless steel straps and fasteners, neoprene gasket and backup plate. Mechanical saddles shall be heat fusion saddles, Strap-On-Saddle Type as manufactured by Driscoplex™ or Tapping Saddle manufactured by Fernco Joint Sealer Company, DFW Plastics, Inc. or approved equal. Once the saddle is secured in place, drill hole full inside diameter of saddle outlet in pipe liner.
- D. At all points where the polyethylene pipe has been exposed, as in starter excavations, at service connection fittings, outside of manholes, etc., the contractor shall encase the pipe and fittings in minimum of 6 inches of concrete or flowable backfill. If flowable backfill is used, the contractor shall remove all debris, and create a void along each side of the pipe at the spring line to undisturbed soil, in preparation for the cement stabilized sand backfill. Width of the void shall not exceed (main O.D.+2ft.) or (service line O.D.+2ft.)

3.10 FIELD TESTING

- A. Low Pressure Air Test
1. Prior to reconnection of service lines, all completed mainline sections will be tested in accordance with NCTCOG Item 507.5.1.3 "Low Pressure Air Testing", latest revision. All testing procedures, safety requirement and test times shall be strictly adhered to. Any section not passing the requirements of the test shall be replaced at no cost to the Owner.
- B. Post-Construction Television Inspection

1. The Contractor shall provide for the television inspection for the section or sections of pipe following rehabilitation as outlined in the technical section "Television Inspection of Wastewater Mains."
2. Post-construction television inspection shall be performed after the reconnection of the service laterals or as directed by the Engineer. In no case will the television inspection replace the low-pressure air test above.

3.11 FINAL CLEANUP

- A. Upon completion of installation, testing and inspection, clean and restore project area affected by work of this section.

END OF SECTION

SECTION 33 04 44
SETTLEMENT MONITORING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Furnishing, installing, and monitoring settlement instrumentation for measuring ground movements around and above trenchless construction operations. The Work includes, but is not limited to: installing surface monitoring points, furnishing monitoring equipment, and recording observations and measurements from the monitoring points on a periodic basis before, during, and after trenchless construction.

B. Related Specification Sections include, but are not necessarily limited to:

1. 33 05 45 – Contact Grouting

1.2 PRICE AND PAYMENT PROCEDURES

A. Measurement and Payment:

1. Measurement:

- a. This item is considered subsidiary to Sewer Pipe Trenchless Method by Pipe Bursting.

2. Payment:

- a. The work performed and materials furnished in accordance with this Item are considered subsidiary the unit price bid per linear foot of Sewer Pipe Trenchless Method by Pipe Bursting, to be completed in place, and no other compensation will be allowed.

1.3 REFERENCES

A. Definitions:

1. Surface Monitoring Points: A marking established as a baseline for measuring elevation of the ground surface using optical survey methods.

B. Reference Documents:

1. “Geotechnical Engineering Study – Pavement Investigation N. Lakeshore Drive Reconstruction Masters Boulevard to W. Rusk Street, Rockwall, Texas”, CMJ Engineering Project No. 103-24-553, October 10, 2024.

1.4 ADMINISTRATIVE REQUIREMENTS [NOT USED]

1.5 SUBMITTALS

A. Submittals shall be made in accordance with NCTCOG Item 105.3 “Shop Drawings, Product Data and Samples.”

B. All submittals shall be approved by the City prior to delivery.

1.6 ACTION SUBMITTALS/INFORMATIONAL SUBMITTALS

A. Qualifications:

1. Submit surveying personnel qualifications in accordance with the requirements herein.

B. Shop Drawings:

1. Submit the following, at least one (1) month before scheduled installation of monitoring points:
 - a. Instrumentation Schedule: Submit the proposed schedule for installing the surface monitoring points.
 - b. Description of methods and materials for installing and protecting surface monitoring points.
 - c. Drawings with locations of proposed monitoring points shown in plan and profile.

C. Reports and Records:

1. The Contractor shall submit all reports of monitoring data to the City.
2. Within 72 hours following installation of the instruments, submit:
 - a. Drawings showing the actual as-built installed location
 - b. Instrument identification number
 - c. Instrument type
 - d. Installation date and time
 - e. Tip elevation and instrument length.
 - f. Include details of installed instruments, accessories and protective measures including all dimensions and materials used.
3. Submit surveyed baseline measurements of all monitoring points at least seven (7) days prior to commencing excavation to establish baseline readings.
4. Submit surveyed measurements of monitoring points during and after construction in accordance with Part 3 of this Specification.

1.7 CLOSEOUT SUBMITTALS [NOT USED]

1.8 MAINTENANCE MATERIAL SUBMITTALS [NOT USED]

1.9 QUALITY ASSURANCE

- A. Surveyor Qualifications: All surveying shall be performed by a land surveyor licensed in the State of Texas with previous experience surveying for the detection of surface deformations.
- B. Should actual field conditions prevent installation of instruments at the location shown on the Drawings or specified herein, obtain written acceptance from the City for new instrument location and elevation.
- C. Surveying for monitoring settlement instrumentation shall be referenced to the same control points and benchmarks established for setting out the Work. Control points shall be tied to benchmarks and other monuments outside of the zone of influence of the excavation or trenchless construction.
- D. Installation of instrumentation shall, at all times, be performed in the presence of the City.
- E. Contractor shall provide access and assistance to the City for obtaining supplemental monitoring data, as requested by City.
- F. Provide data from readings of all monitoring points to the City within 24 hours of reading.

1.10 DELIVERY, STORAGE, AND HANDLING [NOT USED]

1.11 FIELD [SITE] CONDITIONS [NOT USED]

1.12 WARRANTY [NOT USED]

PART 2 - PRODUCTS

2.1 CITY-FURNISHED [OR] CITY-SUPPLIED PRODUCTS [NOT USED]

2.2 MATERIALS

A. Surface Monitoring Points:

1. Surface monitoring points shall be established by an inscribed marking or approved surveyor's nail driven flush with the surface in asphalt or concrete paved areas.
2. In landscaped areas, surface monitoring points shall be established by driving a 0.5-inch steel rod driven a minimum of 18-inches until flush with the ground. The stake shall be driven to a depth required to provide a stable monitoring point given the soil conditions.
3. Each monitoring point shall have a tag or marking indicating the station and offset from centerline.

B. Design Criteria:

1. Any ground movements (settlement/heave) shall be limited to values that do not cause damage to adjacent utilities and facilities. In no case shall settlements exceed the applicable values listed in Table 1 below.

Table 1 – Maximum Allowable Settlement / Heave Values

Site Feature	Allowable Settlement / Heave (inches)
Surface Streets	0.50
Unimproved Ground	3.00

PART 3 - EXECUTION

3.1 INSTALLERS [NOT USED]

3.2 EXAMINATION [NOT USED]

3.3 PREPARATION

3.4 INSTALLATION

A. General:

1. Install all monitoring points and instrumentation within one-half (0.5) foot of the horizontal and vertical location shown on the Drawings or as directed by the City. Additional surface monitoring points may be required and shall be installed as directed by the City.
2. Instrumentation shall be installed at the locations shown on the Drawings, and as approved by the City. Instruments shall be installed in accordance with the approved installation schedule.
3. The Contractor shall locate conduits and underground utilities in all areas where borings are to be drilled and instruments installed. Instrument locations shall be modified, as approved by the City, to avoid interference with the existing conduit and utilities. The Contractor shall repair damage to existing utilities resulting from instrument installations.
4. Contractor shall install and perform a baseline survey of all surface settlement monitoring devices at least 7 days prior to excavation or trenchless construction.

B. Monitoring Frequency:

1. Surface Monitoring Points: Initial survey measurements shall be obtained prior to any excavation and daily after beginning excavation, or trenchless construction.
2. All monitoring points shall be surveyed at least once per day during trenchless construction operations. Once these operations are complete, all settlement monitoring devices shall be surveyed once per day for the first seven days, once at 14 days, and once at 30 days after completion of the trenchless work.

C. Surface Monitoring Points:

1. Establish a system of surface monitoring points. Monitoring point locations are shown on the Drawings. Up to four (4) additional monitoring point locations shall be determined jointly by the City and Contractor in the field prior to construction.
2. Surveying of surface monitoring points shall consist of determining the elevation of each monitoring point with respect to a benchmark selected by the City to a precision of 0.01 foot.

D. Instrument Protection, Maintenance and Repair:

1. Protect the instruments and surface control points from damage. Damaged installations shall be replaced or repaired prior to continuing excavation, or trenchless construction, unless permitted otherwise in writing by the City.

E. Abandonment of Instruments:

1. Surface Monitoring Points:
 - a. All surface monitoring points on public property shall remain in place at the completion of the Work.
 - b. Remove all surface monitoring points on private property during the cleanup and restoration work, or as required by the City.

- | | |
|----|--|
| 1 | 3.5 RE-INSTALLATION [NOT USED] |
| 2 | 3.6 SITE QUALITY CONTROL [NOT USED] |
| 3 | 3.7 SYSTEM STARTUP [NOT USED] |
| 4 | 3.8 ADJUSTING [NOT USED] |
| 5 | 3.9 CLEANING [NOT USED] |
| 6 | 3.10 CLOSEOUT [NOT USED] |
| 7 | 3.11 PROTECTION [NOT USED] |
| 8 | 3.12 MAINTENANCE [NOT USED] |
| 9 | 3.13 ATTACHMENTS [NOT USED] |
| 10 | END OF SECTION |

SECTION 33 11 10
DUCTILE IRON FITTINGS

PART 1 - GENERAL

A. SUMMARY

1. Furnish labor, materials, equipment, and incidentals necessary to install ductile-iron fittings, including connections and appurtenances as required for the proper installation and function of the system, as indicated in the NCTCOG Standard Specification Item 501.7 except as modified herein.
2. Polyethylene encasement for ductile iron fittings is detailed in this Section.

B. REFERENCES

1. Reference Standards
 - a. Reference standards cited in this specification refer to the current reference standard published at the time of the latest revision date logged at the end of this specification, unless a date is specifically cited.
 - b. American National Standards Institute (ANSI)/American Water Works Association (AWWA)
 - 1) ANSI/AWWA C104/A21.4 - American National Standard for cement - Mortar Lining for Ductile-Iron Pipe and Fittings for water.
 - 2) ANSI/AWWA C105/A21.5 - American National Standard for Polyethylene Encasement.
 - 3) ANSI/AWWA C110/A21.10 - American National Standard for Ductile Iron and Grey Iron Fittings, 3-inch through 48 inches for water and other liquids.
 - 4) ANSI/AWWA C111/A21.11 - American National Standard for Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings.
 - 5) ANSI/AWWA C153/A21.53, "Ductile-Iron Compact Fittings For Water Service"
 - 6) AWWA M-41 - Ductile-Iron Pipe and Fittings.
 - c. North Central Texas Council of Governments (NCTCOG)
 - 1) NCTCOG 501.7 - Ductile Iron Pressure Pipe and Fittings.

1.2 ADMINISTRATIVE REQUIREMENTS [NOT USED]

1.3 SUBMITTALS

- A. Submittals shall be in accordance with City standard specifications.
- B. All submittals shall be approved by the Engineer or the Owner prior to delivery and/or fabrication for specials.

1.4 ACTION SUBMITTALS/INFORMATIONAL SUBMITTALS

A. Product Data

1. Product cut sheets
2. Exterior painting to include recommendation for preparation, application and storage.

B. Certificates

1. Prior to delivery of the pipe to the project site, the manufacturer shall furnish an affidavit certifying that all pipe, fittings, and specials, and other products and materials furnished, comply with this specification. If requested by the Owner, the manufacturer shall submit certified reports of all testing.

1.5 CLOSEOUT SUBMITTALS [NOT USED]

1.6 MAINTENANCE MATERIAL SUBMITTALS [NOT USED]

1.7 QUALITY ASSURANCE

- A. Manufacturer: Fittings shall be the product of one (1) manufacturer. Fittings manufacturing operations (fittings, lining, coating) shall be performed at one (1) location.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Delivery and Storage shall be in accordance with AWWA M41.

1.9 FIELD CONDITIONS [NOT USED]

1.10 WARRANTY [NOT USED]

PART 2 - PRODUCTS

2.1 DUCTILE IRON FITTINGS

A. Manufacturers

1. The following manufacturers are acceptable
 - a. American Cast Iron Pipe Company
 - b. US Pipe
 - c. Or Approved Equal

B. Performance/Design Criteria

1. Fittings shall be full body per AWWA C110/A21.10 or compact per AWWA C153/A21.53.
 - a. Fittings shall have flanged, mechanical, restrained, push-on joints or any combination of these.
 - b. Joints must comply with the latest version of ANSI/AWWA C111/A21.11 (AWWA C115/A21.15, ANSI B16.1, Class 125 for flanged joints)
 - c. All joints at fittings and valves shall be mechanically restrained with Megalugs or approved equal.
 - 1) For sizes 24"-42", mechanical restraint may be provided via restrained push on joints.
 - 2) For sizes 48" and larger, mechanical restraint may be provided via LOK-Ring joints.
2. Pressure Rating:
 - a. Unless specified otherwise, the rated working pressures for fittings are as follows:

Ductile Iron Compact Fittings (AWWA C153/A21.53)

<u>Nominal Size (in)</u>	<u>Pressure Rating (PSI)</u>
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3" – 24"	350 PSI
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30" – 48"	250 PSI
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54" – 64" 250 PSI

Ductile-Iron Full Body Fittings (AWWA C110/A21.10)

Nominal Size (in)	Pressure Rating (PSI)
3" – 24"	350 PSI
30" – 48"	250 PSI

b. Working pressure - 150 psi.

c. Total pressure – 225 psi

d. Test pressure shall be in accordance with NCTCOG Item 506.7 "Purging and Disinfection of Water Conduit."

3. Dimensions and Thickness

a. Fittings shall conform to the thickness and dimensions shown in the various standards referenced under Section 1.02.B.

4. Flange

a. Unless specified otherwise, the bolt circle and the bolt-holes shall match those of ANSI B16.1 Class 125. All screwed-on flanges shall be ductile iron. Field fabrication of flanges shall be prohibited, unless approved otherwise.

5. Gland

a. Glands shall be manufactured of ductile iron conforming to ASTM A536. Restraining devices shall be of ductile iron. Dimensions of the gland shall be such that it can be used with the standardized joint bell and tee-head bolts conforming to AWWA C110/A21.10 or AWWA C153/A21.53.

6. Accessories

a. Unless otherwise specified, gaskets, glands, bolts, and nuts shall be furnished with mechanical joints, and gaskets and lubricant shall be furnished with push-on joints; all in sufficient quantity for assembly of each joint.

7. Marking: Fitting marking shall meet the requirements of ANSI/AWWA C110/A21.10 or ANSI/AWWA C153/A21.53 shall have distinctively cast on them the following information:

a. C-153 or C-110, depending on which type of fitting provided.

b. Pressure Rating

c. Nominal diameter of openings

d. Manufacturer's identification

e. Country where cast

f. Number of degrees or fraction of the circle on all bends

g. Letters "DI" or "DUCTILE" cast on them.

C. Materials

1. Bolts and Nuts:

a. Provide ASTM A193 Grade B8M bolts and ASTM A194 Grade 8M Nuts.

b. All T-bolts shall be 316 stainless steel.

D. Finishes

1. Finish Materials

a. Exterior Coating

1) Buried

a) Asphaltic coating, minimum of 1 mil thickness or;

- b) Fusion bonded coatings in accordance with ANSI/AWWA C116/A21.16. Minimum dry film thickness of 4 mils and certified in accordance with ANSI/NSF 61.
- 2) Exposed, Manhole
 - a) Asphaltic coating, minimum of 1 mil thickness
- b. Interior Lining
 - 1) All ductile iron fittings are to be furnished with a cement-mortar lining of standard thickness as defined in referenced ANSI/AWWA C104/A21.4 and given a seal coat of asphaltic material, unless otherwise specified.
 - 2) Fusion bonded interior coatings shall comply with ANSI/AWWA C116/A21.16, shall have a minimum dry film thickness of 4 mils.
 - 3) All surfaces in contact with potable water shall be certified in accordance with ANSI/NSF 61.

2.2 POLYETHYLENE ENCASEMENT:

- A. All buried ductile iron fittings shall be polyethylene encased in accordance with AWWA C105.
- B. Use only virgin polyethylene material.
- C. Encasement for buried fittings shall be 4 mil high density cross-laminated (HDCL) polyethylene encasement conforming to AWWA C105/A21.5.
- D. Polyethylene film must be marked as follows:
 - 1. Manufacturer's name or trademark
 - 2. Year of manufacturer
 - 3. ANSI/AWWA C105/A21.5
 - 4. Minimum film thickness and material type
 - 5. Applicable range of nominal diameter size(s).
 - 6. Warning-Corrosion Protection-Repair Any Damage
- E. Special Markings/Colors
 - 1. Reclaimed Water, perform one of the following:
 - a. Label polyethylene encasement with "RECLAIMED WATER",
 - b. Provide purple polyethylene in accordance with the American Public Works Association Uniform Color Code; or
 - c. Attach purple reclaimed water marker tape to the polyethylene wrap.
 - 2. Wastewater, perform one of the following:
 - a. Label polyethylene encasement with "WASTEWATER";
 - b. Provide green polyethylene in accordance with the American Public Works Association Uniform Color Code; or
 - c. Attach green sanitary sewer marker tape to the polyethylene wrap.

PART 3 - EXECUTION

3.1 GENERAL:

- A. Install fitting in accordance with AWWA M41 and in accordance with the pipe manufacturer's recommendations.

B. Polyethylene encasement shall be installed in accordance with AWWA C105 and AWWA M41.

C. All pipe shall be mechanically restrained at fittings and valves.

D. Polyethylene encasement shall be installed in accordance with AWWA C105 and AWWA M41, Method A or B. Method C will not be allowed.

3.2 JOINT MAKING

A. Mechanical Joints

1. Assemble mechanical joints in accordance with ANSI/AWWA C111/A21.11 Appendix A, AWWA C600, and AWWA Manual M41
2. Bolt the follower ring into compression against the gasket with the bolts tightened down evenly then cross torqued in accordance with AWWA C600.
3. Overstressing of bolts to compensate for poor installation practice will not be permitted.

B. Push-on Joints

1. Install Push-on joints as defined in AWWA/ANSI C111/A21.11.
2. Wipe clean the gasket seat inside the bell of all extraneous matter.
3. Place the gasket in the bell in the position prescribed by the manufacturer.
4. Apply a thin film of non-toxic vegetable soap lubricant to the inside of the gasket and the outside of the spigot prior to entering the spigot into the bell.
5. When using a field cut plain end piece of pipe, refinish the field cut and scarf to conform to AWWA C600.

C. Flanged Joints

1. Install in accordance with ASME PCC-1-2012.
2. During assembly, tighten nuts gradually and equally using a three-pass method in accordance with ASME PCC-1-2012.
 - a. For the first pass, tighten the nuts to 50 percent at diametrically opposite sides to prevent misalignment and to ensure that all bolts carry equal loads.
 - b. For the second pass, tighten the nuts to 100 percent again in a diametrically opposite pattern.
 - c. Allow a minimum of 1 hour to pass to provide time for settlement between bolts and nuts and gasket relaxation.
 - d. Complete the third pass by checking each bolt in a clockwise pattern. Each nut should be tightened until it will no longer turn. This step compensates for elastic interaction and brings all bolts into parity.
3. The threads of the bolts should protrude a minimum of ½-inch from the nuts.
4. The fitting must be free to move in any direction while bolting.
 - a. Install flange bolts with all bolt heads faced in one direction.

3.3 POLYETHYLENE ENCASEMENT INSTALLATION

A. Sheet Type (Method C) – Applicable to Valves, Tees, Elbows and Other Fittings Only

1. Cut polyethylene sheet to a length approximately 2 feet longer than piece section.
2. Center length to provide 1-foot overlap on each adjacent pipe section, bunching it until it clears the pipe ends.

3. Wrap polyethylene around pipe so that it circumferentially overlaps top quadrant of pipe.
4. Secure cut edge of polyethylene sheet at intervals of approximately 3 feet.
5. Lower wrapped pipe into trench and make up pipe joint with preceding section of pipe.
6. Make shallow bell hole at joints to facilitate installation of polyethylene.
7. After completing joint, make overlap and secure ends.
8. Repair cuts, tears, punctures or other damage to polyethylene.
9. Proceed with installation of next section of pipe in same manner.

B. Odd-Shaped Appurtenances

1. When it is not practical to wrap valves, tees, crosses, and other odd-shaped pieces in tube, wrap with flat sheet or split length polyethylene tube by passing sheet under appurtenances and bringing it up around body.
2. Make seams by bringing edges together, folding over twice and taping down.
3. Tape polyethylene securely in place at the valve stem and at any other penetrations.

C. Repairs

1. Repair any cuts, tears, punctures or damage to polyethylene with adhesive tape or with short length of polyethylene sheet or cut open tube, wrapped around fitting to cover damaged area and secured in place.

3.4 FIELD QUALITY CONTROL

- A. Purging, sterilization, and testing shall be performed in accordance with NCTCOG Item 506.7 "Purging and Disinfection of Water Conduits."

END OF SECTION

SECTION 33 34 05
BYPASS PUMPING OF EXISTING SEWER SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Bypass pumping of the existing sewer system, required on sewer lines unless otherwise specified in the Contract Documents

B. Related Specification Sections include but are not necessarily limited to

1. Drawings and general provisions of the Contract, including Special Conditions, apply to work of this section.

1.2 REFERENCES

A. Reference Standards

1. Reference standards cited in this Specification refer to the current reference standard published at the time of the latest revision date logged at the end of this Specification, unless a date is specifically cited.
2. Occupational Safety and Health Organization (OSHA).

1.3 ADMINISTRATIVE REQUIREMENTS

A. Coordination

1. Schedule meeting with City to review sewer shutdown prior to replacing or rehabilitating any facilities.
2. City reserves the right to delay schedule due to weather conditions, or other unexpected emergency within the sewer system.
3. Review bypass pumping arrangement or layout in the field with City prior to beginning operations. Facilitate preliminary bypass pumping run with City staff present to affirm the operation is satisfactory to the City.
4. After replacement or rehabilitation of facilities, coordinate the reestablishment of sewer flow with City staff.
5. Provide onsite continuous monitoring during all bypass pumping operations by having personnel on site

1.4 SUBMITTALS

- A. Submittals shall be in accordance with NCTCOG Item 105.3 "Shop Drawings, Product Data and Samples."

- B. All submittals shall be approved by the Engineer and the City prior to delivery.

1.5 ACTION SUBMITTALS/INFORMATIONAL SUBMITTALS

- A. Shop Drawings

1. Submit a detailed plan and description outlining all provisions and precautions that will be taken with regard to the handling of sewer flows. Submit the plan to the Engineer for approval a minimum of 7 days prior to commencing work. Include the following details:
 - a. Schedule for installation and maintenance of the bypass pumping system
 - b. Staging areas for pumps
 - c. Pump sizes, capacity, number of each size, and power requirements
 - d. Calculations for static lift, friction losses, and velocity
 - e. Pump curves showing operating range and system head curves
 - f. Sewer plugging methods
 - g. Size, length, material, joint type, and method for installation of suction and discharge piping
 - h. Method of noise control for each pump and/or generator, if required
 - i. Standby power generator size and location
 - j. Suction and discharge piping plan
 - k. Emergency action plan identifying the measures taken in the event of a pump failure or sewer spill
 - l. Staffing plan for responding to alarm conditions identifying multiple contacts by name and phone numbers (office, mobile)
 - m. A contingency plan to implement in the event the replacement or rehabilitation has unexpected delays or problems

1.6 CLOSEOUT SUBMITTALS [NOT USED]

1.7 MAINTENANCE MATERIAL SUBMITTALS [NOT USED]

1.8 QUALITY ASSURANCE [NOT USED]

1.9 DELIVERY, STORAGE, AND HANDLING [NOT USED]

1.10 FIELD CONDITIONS [NOT USED]

1.11 WARRANTY [NOT USED]

PART 2 - PRODUCTS

2.1 EQUIPMENT

A. Pumping

1. Provide equipment that will convey 100 percent of the capacity of the pipeline that is being taken out of service.
2. Provide fully automatic self-priming pumps. Foot-valves or vacuum pumps are not permitted for priming the system.
3. Pumps must be constructed to allow dry running for periods of time to account for the cyclical nature of sewer flow.
4. Provide 1 stand-by pump for each size to be maintained on site. Place backup pumps on line, isolated from the primary system by valve.
5. If multiple pumps are required to meet the flow requirements, provide the necessary fittings and connections to incorporate multiple discharges.
6. Noise levels of the pumping system must follow the requirements of the City's noise standards

- a. Pumps shall be sound attenuated, producing at or below 70dBA at 23 feet. Pump system shall be Quiet Flow as provided by Sunbelt Rentals or approved equals.

B. Piping

- 1. All piping shall be fused HDPE. No other materials will be allowed.

C. Plugs or Stop Logs

1. Plugs

- a. Select a plug that is made for the size and potential pressure head that will be experienced.
- b. Provide an additional anchor, support or bracing to secure plug when back pressure is present.
- c. Use accurately calibrated air pressure gauges for monitoring the inflation pressure.
- d. Place inflation gauge at location outside of confined space area. Keep the inflation gauge and valve a safe distance from the plugs.
- e. Never over inflate the plug beyond its pressure rating.

2. Stop Logs

- a. Use stop log devices designed for the manhole or sewer vault structure in use.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Locate the bypass pipelines in areas to minimize disturbance to existing utilities and obtain approval of those locations from the City.
- B. Make preparations to comply with OSHA requirements when working in the presence of sewer gases, oxygen-deficient atmospheres and confined spaces.
- C. Do not begin bypass preparation and operation until City approval of the submittals requested per this Specification.

3.2 INSTALLATION

- A. Install and operate pumping and piping equipment in accordance with the submittals provided per this Specification.
- B. Sewer flow stoppage
 - 1. Plugging
 - a. Use confined space procedures and equipment during installation when necessary.
 - b. Thoroughly clean the pipe before insertion of the plug.
 - c. Insert the plug seal surface completely so it is fully supported by the pipe.
 - d. Position the plug where there are not sharp edges or protrusions that may damage the plug.
 - e. Use pressure gauges for measuring inflation pressures.
 - f. Minimize upstream pressure head before deflating and removing.
- C. Sewer flow control and monitoring

1. Take sufficient precautions to ensure sewer flow operations do not cause flooding or damage to public or private property. The Contractor is responsible for any damage resulting from bypass pumping operations.
2. Begin continual monitoring of the sewer system as soon as the sewer is plugged or blocked. The bypass pumping system must be manned 24 hours a day when in operation. Be prepared to immediately start bypass pumping if needed due to surcharge conditions.
3. Sewer discharge may be into another sewer manhole, force main quick connect, or appropriate vehicle or container only. Do not discharge sewer into an open environment such as an open channel or earthen holding facility.
4. Do not construct bypass facilities where vehicular traffic may travel over the piping.
5. Provide details in the suction and discharge piping plan that accommodate both the bypass facilities and traffic without disrupting either service.

3.3 FIELD OR SITE QUALITY CONTROL

A. Field [OR] Site Tests and Inspections

1. Perform leakage and pressure tests of the bypass pumping pipe and equipment before actual operation begins. Have City staff on site during tests.

3.4 CLOSEOUT ACTIVITIES

- #### **A.**
- Once plugging or blocking is no longer necessary, remove in such a way that permits the sewer flow to slowly return to normal – preventing surge, surcharging and major downstream disturbance.

END OF SECTION

SECTION 33 39 60

LINERS FOR SANITARY SEWER STRUCTURES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes

1. Application of a coating system to concrete utility structures such as manholes, lift station wet wells, junction boxes or other concrete facilities that may need protection from corrosive materials

B. Related Specification Sections include but are not necessarily limited to

1. Drawings and general provisions of the Contract, including Special Provisions, apply to work of this section.

1.2 REFERENCES

A. Reference Standards

1. Reference standards cited in this Specification refer to the current reference standard published at the time of the latest revision date logged at the end of this Specification, unless a date is specifically cited.
2. American Society for Testing and Materials (ASTM):
 - a. C109, Compressive Strength Hydraulic Cement Mortars
 - b. C579, Compressive Strength of Chemically Setting Silicate and Silica Chemical Resistant Mortars
 - c. D543, Standard Practices for Evaluating the Resistance of Plastics to Chemical Reagents.
 - d. D638, Standard Test Method for Tensile Properties of Plastics.
 - e. D695, Standard Test Method for Compressive Properties of Rigid Plastics.
 - f. D790, Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials.
 - g. D4060, Standard Test Method for Abrasion Resistance of Organic Coatings by the Taber Abraser.
 - h. D4258, Standard Practice for Surface Cleaning Concrete
 - i. D4259, Standard Practice for Abrading Concrete
 - j. D4414, Standard Practice for Measurement of Wet Film Thickness by Notch Gages.
 - k. D4541, Standard Test Method for Pull-off Strength of Coatings Using Portable Adhesion Testers.
 - l. ASTM D4787, Standard Practice for Continuity Verification of Liquid or Sheet Linings Applied to Concrete Substrates
3. Environmental Protection Agency (EPA).
4. NACE International (NACE).
 - a. NACE SPO 188
5. Occupational Safety and Health Administration (OSHA).
6. Resource Conservation and Recovery Act, (RCRA).
7. The Society for Protective Coatings (SSPC):
 - a. SP 13/NACE No. 6, Surface Preparation of Concrete

- b. PA 9, Paint Application 9
- 8. International Concrete Repair Institute (ICRI)
 - a. ICRI Guideline No. 03732

1.3 ADMINISTRATIVE REQUIREMENTS [NOT USED]

1.4 SUBMITTALS

- A. Submittals shall be in accordance with City standard specifications.
- B. All submittals shall be approved by the Engineer of the Owner prior to delivery.

1.5 ACTION SUBMITTALS/INFORMATIONAL SUBMITTALS

A. General

- 1. The Contractor shall also provide copies of the paint system submittals to the coating applicator.
- 2. Indiscriminate submittal of manufacturer's literature only is not acceptable.

B. Product Data

- 1. Technical data sheet on each product used
- 2. Material Safety Data Sheet (MSDS) for each product used
- 3. Paint System Data Sheet (PSDS) for each product used. A sample form is appended at the end of this Section.
- 4. Copies of independent testing performed on the coating product indicating the product meets the requirements as specified herein
- 5. Technical data sheet and project specific data for repair materials to be topcoated with the coating product including application, cure time and surface preparation procedures

C. Shop Drawings

- 1. Submit samples of finish color for approval by Engineer.

D. Test and Evaluation Reports

- 1. Provide TCLP test data for lead and other regulated heavy metals in non-recyclable, slag type abrasive blast media to be used on the Project. Acceptable abrasive test data shall indicate the abrasive manufacturer, location of manufacture, and media gradation and type. Surface preparation will not be permitted to begin until acceptable test data has been submitted.

E. Quality Control Submittals

- 1. Current documentation from coating product manufacturer certifying Contractor's training and equipment complies with the Quality Assurance requirements specified herein
- 2. Five recent references of Contractor indicating successful application of coating product(s) of the same material type as specified herein, applied by spray application within the municipal wastewater environment
- 3. Factory Applied Coatings: Manufacturer's certification stating factory applied coating systems meets or exceeds requirements specified herein.

1.6 CLOSEOUT SUBMITTALS [NOT USED]

1.7 MAINTENANCE MATERIAL SUBMITTALS [NOT USED]

1.8 QUALITY ASSURANCE

A. Qualifications

1. Manufacturer

- a. The paint manufacturer shall provide a representative to visit the jobsite at intervals during surface preparation and painting as may be required for product application quality assurance, and to determine compliance with manufacturer's instructions and the Contract Documents, and as may be necessary to resolve field problems attributable to, or associated with, the manufacturer's products furnished under this Contract.

2. Manhole Applicator

- a. Manufacturer certification that Applicator has been trained and approved in the handling, mixing and application of the products to be used. Certification letter shall be dated within six months of bid date.
- b. The Manufacturer shall provide five references which demonstrate previous successful projects completed for the specified structural protective coating system or comparable, during the last two years. The Engineer will waive the requirement for 5 years' experience, when at the discretion of the Engineer, the applicators' experience and capabilities meet the intent of the experience requirement.
- c. Certification that the equipment to be used for applying the products has been manufactured or approved by the protective coating manufacturer and Applicator personnel have been trained and certified for proper use of the equipment. Certification letter shall be dated within six months of bid date.

B. Product

1. For a product to be commercially acceptable, the product must have a minimum 500,000 square feet and five (5) year history of successful wastewater collection system installation in the United States.
2. Primer and finish coats for each coating system shall be produced by same paint manufacturer.

C. Inspection

1. Inspect and provide substrate surfaces prepared in accordance with the Contract Documents and the printed directions and recommendations of paint manufacturer whose product is to be applied.
2. Provide Engineer minimum 3 days' advance notice prior to start of surface preparation work or coating application work.
3. Inspection by the Engineer, or the waiver of inspection of any particular portion of the Work, shall not be construed to relieve the Contractor of responsibility to perform the Work in accordance with the Contract Documents.

1.9 DELIVERY, STORAGE, AND HANDLING

- A. Deliver paint materials in sealed original labeled containers bearing manufacturers name, type of paint, brand name, color designation and instructions for mixing.
- B. Keep materials dry, protected from weather and stored under cover.

- C. Store coating materials between 50 degrees F and 90 degrees F in a well ventilated area.
- D. Do not store near flame, heat or strong oxidants.
- E. Handle coating materials according to their material safety data sheets.

1.10 FIELD CONDITONS

- A. Provide confined space entry, flow diversion and/or bypass plans as necessary to perform the specified work.
- B. Comply with manufacturer's recommendations as to environmental conditions under which coatings and systems can be applied.
- C. Do not apply finish in areas where dust is being generated.
- D. Do not perform abrasive blast cleaning whenever the relative humidity exceeds 85 percent or whenever surface temperature is less than 5 degrees F above the dew point of the ambient air.
- E. Surface preparation power tools and blast equipment shall contain dust collection equipment that will prevent discharge of dust particles into the atmosphere when surface preparation work is located within enclosures or confined areas with electrical equipment, motors, instrumentation, or other equipment that may be damaged by airborne dust and particles.

1.11 WARRANTY

- A. Contractor Warranty
 - 1. The Contractor and coating manufacturer shall jointly and severally warrant to the Owner and guarantee the Work under this Section against defective workmanship and materials for a period of 2 years commencing on the date of final acceptance of the Work.
 - 2. A warranty inspection shall be conducted 1 month prior to expiration of the warranty period. Any defective Work discovered at this date shall be corrected by the Contractor in accordance with the Contract Documents at no additional cost to the Owner. Other corrective measures may be required during the 2 year warranty period.

PART 2 - PRODUCTS

2.1 MANHOLE LINING

- A. Manufacturers
 - 1. Raven Lining Systems
 - 2. Or approved equal
- B. Description
 - 1. Lining system shall be 100% solids ultra high build epoxy specifically developed for the corrosive wastewater environment.
 - 2. Lining system shall be Raven 405
 - 3. Capable of being installed and curing properly within a manhole.
 - 4. Resistant to all forms of chemical or bacteriological attack found in municipal sanitary sewer systems; and, capable of adhering to typical manhole structure substrates.

5. Thickness – Reference Painting and Finishing Schedule in Section 3.10.

2.2 REPAIR AND RESURFACING PRODUCTS

A. General

1. Compatible with the specified coating product(s) in order to bond effectively, thus forming a composite system
2. Used and applied in accordance with the manufacturer's recommendations

B. Manhole

1. 100% solids, solvent-free grout specifically formulated for approved topcoating compatibility. The grout manufacturer shall provide instructions for trowel or spray application and for approved topcoating procedures.
2. In the case of excessive infiltration, a hydraulic cement or plug may be used to stop the flow of the infiltration. Approved manufacturer's include Strong, or approved equal. The hydraulic cement shall be compatible with the spray applied resin coating.
3. Repairs to exposed rebar, defective pipe penetrations or inverts, etc. shall be repaired utilizing rapid setting, high early strength, fiber reinforced, non-shrink repair mortar that can be troweled or pneumatically spray applied and specifically formulated to be suitable for topcoating with the specified coating product used

2.3 COATING APPLICATION EQUIPMENT

A. Manufacturer approved spray equipment

B. Hard to reach areas, primer application and touch-up may be performed using hand tools.

PART 3 - EXECUTION

3.1 REGULATORY REQUIREMENTS

A. Protect workers and comply with applicable federal, state, and local air pollution and environmental regulations for surface preparation, blast cleaning, disposition of spent aggregate and debris, coating application and dust prevention including, but not limited to the following Acts, Regulations, Standards, and Guidelines:

1. Clean Air Act.
2. National Ambient Air Quality Standard.
3. Resource Conservation and Recovery Act (RCRA).

B. Comply with applicable federal, state, and local regulations for confined space entry.

C. Provide and operate equipment that meets explosion proof requirements.

D. Perform painting in accordance with recommendations of the following:

1. Paint manufacturer's instructions.
2. NACE contained in the publication, Manual for Painter Safety.

3.2 APPLICATORS

A. All installers shall be certified applicators approved by the manufacturers. Contractor shall have a manufacturer's representative present at the start of the coating procedure.

3.3 DEHUMIDIFICATION

- A. Where weather conditions or Project requirements dictate, Contractor shall provide and operate dehumidification equipment to maintain environmental conditions suitable for abrasive blasting and coating application as specified.
- B. Equipment size and power requirements shall be designed and operated by personnel trained in the operation and setup of dehumidification equipment based on Project requirements and anticipated weather conditions.
- C. If required, dehumidification equipment shall operate 24 hours per day and continuously throughout surface preparation and coating application.
- D. Daily maintenance requirements of the equipment shall be documented in writing and posted near the equipment for review by the Engineer.

3.4 VENTILATION AND ILLUMINATION

- A. Adequate illumination shall be provided while work is in progress. Whenever required by the inspector, the Contractor shall provide additional illumination and necessary supports to cover all areas to be inspected. The level of illumination for inspection purposes shall be determined by the inspector.
- B. Ventilation shall be used to control potential dust and hazardous conditions within confined areas. Ventilation flow rates shall be in accordance with OSHA regulations and as required to reduce air contamination to nonhazardous conditions.

3.5 PREPARATION

- A. Inspection
 - 1. Thoroughly examine surfaces scheduled to be painted prior to commencement of work.
 - 2. The application of finishes shall be held to denote the acceptance of surfaces and conditions by the painter and he will be responsible for producing results reasonably to be expected under the specifications. Structures shall be swept out before application of paint, and no sweeping shall be done in or adjacent to places where the paint has not had sufficient time to dry dust-free.
- B. Manhole Preparation
 - 1. Stop active flows via damming, plugging or diverting as required to ensure all liquids are maintained below or away from the surfaces to be coated.
 - 2. Maintain temperature of the surface to be coated in accordance with manufacturer's recommendations.
 - 3. Shield specified surfaces to avoid exposure of direct sunlight or other intense heat source.
 - 4. Where varying surface temperatures do exist, coating installation should be scheduled when the temperature is falling versus rising.
 - 5. Remove all steps, protrusions or other such obstructions prior to beginning the lining process as directed by the Owner.
 - 6. Prior to commencing surface preparation, Contractor shall inspect all surfaces specified to receive the coating and notify Owner, in writing, of any noticeable disparity in the site, structure or surfaces which may interfere with the work, use of materials or procedures as specified herein.

7. New Portland cement (not quick setting, high strength) concrete manhole or structures shall have cured a minimum of 28 days since manufacture prior to commencing coating installation.

C. Surface Preparation

1. Offset structural components, lids, covers, frames, etc. shall be repaired, replaced, or reset prior to the commencement of surface preparation.
2. Remove oils, grease, incompatible existing coatings, waxes, form release, curing compounds, efflorescence, sealers, salts or other contaminants which may affect the performance and adhesion of the coating to the substrate.
3. Remove concrete and/or mortar damaged by corrosion, chemical attack or other means of degradation so that only sound substrate remains.
4. Surface preparation method, or combination of methods, that may be used include high pressure water cleaning, high pressure water jetting, abrasive blasting, shotblasting, grinding, scarifying, detergent water cleaning, hot water blasting and others as described in SSPC SP 13/NACE No. 6. and ICRI Technical Guideline No. 03732.
 - a. Select type and size of abrasive to produce a surface profile that meets the coating manufacturer's recommendations for the particular coating to be applied or not less than 20 percent of the specified coating thickness, whichever is more stringent.
 - b. Meet applicable federal, state, and local air pollution control regulations for blast cleaning and disposition of spent aggregate and debris.
 - 1) Where OSHA or EPA regulations preclude standard abrasive blast cleaning, wet or vacu-blast methods may be required. Coating manufacturers' recommendations for wet blast additives and first coat application shall apply.
 - c. Hand tool clean areas that cannot be cleaned by power tool cleaning.
 - d. Do not reuse abrasive, unless abrasive is a recyclable abrasive.
5. All methods used shall be performed in a manner that provides a uniform, sound, clean, neutralized, surface suitable for the specified coating product. Required surface profile shall be as specified in Painting and Finishing Schedule.
6. Protection of Surfaces not to be Painted
 - a. Remove, mask, or otherwise protect hardware, lighting fixtures, switchplates, aluminum surfaces, machined surfaces, couplings, shafts, bearings, nameplates on machinery, and other surfaces not intended to be painted.
 - b. Provide drop cloths to prevent paint materials from falling on or marring adjacent surfaces.
 - c. Protect working parts of mechanical and electrical equipment from damage during surface preparation and painting process.
 - d. Mask openings in motors to prevent paint and other materials from entering the motors.

3.6 APPLICATION

A. General

1. All work shall be done by skilled painters. All materials shall be evenly spread and smoothly flowed on without sags or runs, and all coats shall be thoroughly dry per the manufacturer data sheet before applying succeeding coats.
2. Perform coating after the sewer line installation, grade adjustments and grouting are complete.

3. Perform application procedures per recommendations of the coating product manufacturer, including environmental controls, product handling, mixing and application. No exterior painting shall be done in rainy, damp, or frosty weather per the manufacturer data sheet or until the surface is thoroughly dry. No interior painting or finishing shall be permitted until the building has thoroughly dried out by natural or artificial heat.
4. Initiate and enforce quality control procedures consistent with the coating product(s) manufacturer recommendations and applicable NACE or SSPC standards as referenced herein.

B. Temperature

1. Only perform application if surface temperature is between 40 and 120 degrees F or as recommended by the manufacturer.
2. Make no application if freezing is expected to occur inside the manhole within 24 hours after application.

C. Paint Mixing

1. Multiple-component coatings:
 - a. Prepare using all of the contents of the container for each component as packaged by the paint manufacturer.
 - b. No partial batches will be permitted.
 - c. Do not use multiple-component coatings that have been mixed shall not be used beyond their pot life.
 - d. Provide small quantity kits for touchup painting and for painting other small areas.
 - e. Mix only components specified and furnished by the paint manufacturer.
 - f. Do not intermix additional components for reasons of color or otherwise, even within the same generic type of coating.
2. Keep paint materials sealed when not in use.
3. Where more than one coat of a material is applied within a given system, alternate color to provide a visual reference that the required number of coats have been applied.
4. Paints and similar materials shall be mixed in vessels of adequate capacity. All paints shall be thoroughly stirred before being taken from the containers, shall be kept stirred while using, and all ready-mixed paints shall be applied exactly from the manufacturer without addition of any kind of a drier or thinner, except as provided in manufacturer's directions or upon specific authorization.
5. Mixing, thinning and application of the coating materials shall be in exact accordance with the manufacturer's recommendations.

D. Repair/Resurfacing

1. Repair/resurfacing products as per section 2.02 shall be used to fill voids, bugholes, and other surface defects which may affect the performance or adhesion of the coating product(s).
2. If leaks are detected they shall be chipped back, plugged and coated immediately.
 - a. Make repair 24 hours after leak detection.

E. Coating

1. Applied coating system film thickness per coat shall be applied at the specified coating thickness or the manufacturer's recommended minimum thickness, whichever is greater.
2. Maximum film build per coat shall not exceed the coating manufacturer's recommendations.
3. Apply coating from bottom of manhole frame to the bench/trough, including the bench/trough.
4. After walls are coated, remove bench covers and spray bench/trough to at least the same thickness as the walls.
5. Apply any topcoat or additional coats within the product's recoat window.
 - a. Additional surface preparation is required if the recoat window is exceeded.
6. Allow a minimum of 3 hours of cure time or be set hard to touch before reactivating flow.

F. Damaged Coatings, Pinholes, and Holidays

1. Feather edges and repair in accordance with the recommendations of the paint manufacturer.
2. Apply finish coats, including touchup and damage-repair coats in a manner that will present a uniform texture and color-matched appearance.

G. Unsatisfactory Application

1. If the item has an improper finish color, or insufficient film thickness, clean and topcoat surface with specified paint material to obtain the specified color and coverage. Obtain specific surface preparation information from the coating manufacturer. Hand or power sand visible areas of chipped, peeled, or abraded paint and feather the edges. Follow with primer and finish coat in accordance with the Specifications. Depending on the extent of repair and its appearance, a finish sanding and topcoat may be required.
2. Evidence of runs, bridges, shiners, laps, or other imperfections shall be cause for rejection.
3. Repair defects in coating system per written recommendations of coating manufacturer.

3.7 FIELD [OR] SITE QUALITY CONTROL

- A. Coating system thickness shall be inspected to ensure compliance with the specifications herein. Check each coat for the correct mileage.
1. During application, a wet film thickness gauge meeting ASTM D4414 – Standard Practice for Measurement of Wet Film Thickness of Organic Coatings by Notched Gages shall be used. Measurements shall be taken, documented, and attested to by Contractor for submission to Owner.
 - a. Test shall be taken at three locations within the manhole, 2 spaced equally apart along the wall and 1 on the bench.
 2. After the coating product(s) have cured in accordance with manufacturer recommendations, coating system thickness may be measured according to SSPC-PA 9 – Measurement of Dry Coating Thickness on Cementitious Substrates using Ultrasonic Gages.

- 1 B. After the coating product(s) have cured in accordance with manufacturer
2 recommendations, all surfaces shall be inspected for holidays as per NACE SPO 188-
3 2006 Discontinuity (Holiday) Testing of New Protective Coatings on Conductive
4 Substrates or ASTM D4787 Standard Practice for Continuity Verification of Liquid or
5 Sheet Linings Applied to Concrete Substrates. All detected holidays shall be marked
6 and repaired according to the coating product(s) manufacturer's recommendations.
- 7 1. Test voltage shall be a minimum of 100 volts per mil of coating system thickness.
8 2. Detection of a known or induced holiday in the coating product shall be confirmed
9 to ensure proper operation of the test unit.
- 10 3. All areas repaired shall be retested following cure of the repair materials(s).
11 4. In instances where high voltage holiday detection is not feasible, a close visual
12 inspection shall be conducted and all possible holidays shall be marked and
13 repaired as described above.
- 14 5. Documentation of areas tested, equipment employed, results, and repairs made shall
15 be submitted to the Owner/Engineer by Contractor.
- 16 C. Adhesion of the coating system to the substrate shall be confirmed in a minimum of
17 10% of the manholes coated. After the coating product(s) have cured in accordance
18 with manufacturer recommendations, testing shall be conducted in accordance with
19 ASTM D7234 Pull-Off Adhesion Strength of Coatings on Concrete using Portable Pull-
20 Off Adhesion Testers. Owner's representative shall select the manholes or areas to be
21 tested.
- 22 D. Each structure will be visually inspected the same day following the application.
- 23 E. Schedule with Inspector in advance for cleaned surfaces and all coats prior to the
24 succeeding coat. The inspector will check for deficiencies, pinholes and thin spots.
- 25 F. A representative from the coating manufacturer shall be onsite throughout wet well
26 coating process to ensure that the product is being installed in accordance with the
27 manufacturer's recommendations.

28 **3.8 CLEANUP/CLOSEOUT ACTIVITIES**

- 29 A. Cleanup
- 30 1. Place cloths and waste that might constitute a fire hazard in closed metal containers
31 or destroyed at the end of each day.
- 32 2. Upon completion of the Work, remove staging, scaffolding, and containers from the
33 Site.
- 34 3. Completely remove paint spots, oil, or stains upon adjacent surfaces and floors and
35 leave entire job clean.
- 36 4. Damages due to over spray on buildings, vehicles, trees, or other surfaces not
37 specified to be painted would be the responsibility of the Contractor.
- 38 B. Closeout
- 39 1. Upon final completion of the work, the manufacturer will provide a written
40 certification of proper application to the Owner.
- 41 2. The certification will confirm that the deficient areas were repaired in accordance
42 with the procedure set forth in this Specification.

3.9 PAINTING AND FINISHING SCHEDULE

A. The number of coats called for in this schedule shall be considered minimum. If more coats are required for complete coverage and uniform appearance, they shall be applied.

B. Schedule A

1. Application

a. Interior walls and benches of all Portland cement concrete manholes proposed to be installed or rehabilitated.

2. Exposure Conditions

a. Submerged

3. Surface Preparation

a. Allow new concrete to cure 28 days. Level mortar protrusions and mortar splatter.

b. Resulting concrete surface profile (CSP) shall be in accordance with manufacturers recommendations.

4. Lining System

a. Raven 405 liner system at a minimum of 125 mils.

END OF SECTION

1

2

3

4

PAINT SYSTEM DATA SHEET

Attach products’ Technical Data Sheet (if applicable) to this sheet for each paint submittal.

Paint System Number (from spec):		
Paint System Title (from spec):		
Coatings Manufacturer:		
Representative:		
Surface Preparation:		
Paint Material (Generic)	Product Name/Number	Min Coats, Coverage

5

6

7

8

9

10

Additional Information Required (check if applicable):

ANSI/NSF Certification letter for each paint material listed above requiring ANSI/NSF Standard 60 and 61 approval

Manufacturer’s minimum and maximum recommended coating thickness per coat and for total coating system.

APPENDIX

CONTRACTOR SUBMITTAL TRANSMITTAL FORM

REQUEST FOR INFORMATION (RFI)

CITY OF ROCKWALL WATER SYSTEM APPROVED MATERIALS LIST

CITY OF ROCKWALL SANITARY SEWER SYSTEM APPROVED MATERIALS LIST

WAGE RATES

GEOTECHNICAL REPORT (Report No. 103-24-553)

CONTRACTOR SUBMITTAL TRANSMITTAL FORM

SUBMITTAL INFORMATION

Date: _____

Submittal No.: _____

City CIP No.: _____

____ New Submittal
____ Re-Submittal

Project Name: _____

Description of Item Submitted	Spec. No./Drawing Sheet No.	Supplier/Manufacturer

Contractor Certification:

I certify that the above submitted items have been reviewed in detail and are correct and in strict conformance with the contract drawings and specifications except as otherwise stated, and are stamped accordingly.

CONTRACTOR

SIGNATURE

REVIEW

Checking is only for general conformance with the design concept of the project and general compliance with the information given in the contract documents. Any action shown is subject to the requirements of the plans and specifications. Contractor is responsible for: dimensions which shall be confirmed and correlated at the job site, fabrication processes and techniques of construction, coordination of his work with that of all other trades and performing his work in a safe a satisfactory manner.

REVIEWER	NO EXCEPTIONS TAKEN	REJECTED	MAKE CORRECTIONS AS NOTED	REVISE & RESUBMIT	DATE	BY
Record Engineer Firm Name:						
	Comments:					
Engineering Division (Construction Inspector/ Project Manager)						
	Comments:					
Water Division						
	Comments:					
Wastewater/Pump Division						
	Comments:					

REQUEST FOR INFORMATION (RFI)

Project Name: _____ Date: _____

CIP No.: _____

Contractor: _____

Engineer: _____

RFI Description: _____ RFI No.: _____

REFERENCE DATA:

Plan Sheet No.: _____ Sheet Title: _____

Specification No.: _____ Page No.: _____ Paragraph No.: _____

Detailed Description: _____

CONTRACTOR REQUEST:

☐ Additional Information Attached

The following information is requested:

Signature: _____

RESPONSE FROM ☐ CITY/ ☐ ENGINEER: (check one)

☐ Additional Information Attached

Signature: _____

Approved Water Materials List

All materials on this list do not require separate submittals. All materials must be new and in good condition. All materials to be installed for use on projects in the City of Rockwall shall be produced in the United States of America.

Fire Hydrants (all bolts, nuts and washers below bury line to be type 316 stainless-steel)

- Mueller "Super Centurion 250-A423"
- American Darling "B-84B-5"
- Waterous "Pacer WB67"
- Clow "Medallion"
- M&H "Model 129 & 929"
- WaterMaster 5CD250

Valves (all bolts, nuts and washers for valves to be type 316 stainless-steel)

- Mueller Resilient Seat
- Mueller Resilient Wedge
- Mueller Butterfly
- American Darling Resilient Wedge
- American Darling Butterfly
- U.S. Pipe & Foundry "Metro-Seal" Resilient Wedge
- American Flow Control – Series 2500 Resilient Wedge Valve
- Clow Resilient Wedge
- Pratt Butterfly
- American AVK Resilient Seated Gate Valve Series 25, 4"-12"

Valves – Air Release / Combination Air & Vacuum

- Vent-O-Mat 025 RBX 2521 – 1"
- Vent-O-Mat 050 RBX 2521 – 2"

Tapping Sleeves and Valves (all bolts, nuts and washers to be type 316 stainless-steel)

- All require 3/4" NPT brass test plug.

Sleeves (all bolts, nuts and washers to be type 316 stainless steel)

- Mueller H-304 Stainless Steel Tapping Sleeve w/Stainless Steel Flange
- Tyler Traverse Tapping Sleeve
- Clow Traverse Tapping Sleeve
- Dresser Style 630 Heavy Stainless-Steel Tapping Sleeve
- PowerSeal Model 3490 Stainless-Steel Tapping Sleeve
- Ford All Stainless Tapping Sleeve Style FTSS
- Ford All Stainless Tapping Sleeve Style FTSS-MJ
- Smith-Blair 665 Stainless Steel Tapping Sleeve with Stainless-Steel Flange, Smith-Blair 665MJ Stainless-Steel Tapping Sleeve with Stainless-Steel Flange Romac Industries, SST III

Service Saddles

Service Saddles (for PVC, DI or CI)				
Size/Manufacturer	Mueller	Jones	Ford	A.Y. McDonald
¾-inch, 2 Strap	BR-2B, BR-2S	J-979, J-969	202B, 202BS	3825, 3845
1-inch, 2 Strap	BR-2B, BR-2S	J-979, J-969	202B, 202BS	3825, 3845
1 ½ -inch, 2 Strap	BR-2B, BR-2S	J-979, J-969	202B, 202BS	3825, 3845
2-inch, 2 Strap	BR-2B, BR-2S	J-979, J-969	202B, 202BS	3825, 3845

All of the above service saddles are to be cc thread. Saddles must be supplied with stainless-steel bolt/nut/washer, with the exception of a double strap bronze saddle.

Restraint (Retainer) Glands (all bolts, nuts and washers to be type 316 stainless-steel)

- Uni-Flange Series 1400 for 4" thru 12" (Ductile Iron)
- Uni-Flange Series 1500 for 4" thru 12" (C900 PVC)
- EBAA Iron 1100 Series Megalug (Ductile Iron)
- EBAA Iron 2000PV Series Megalug (C900 PVC)
- Stargrip Series 4000 (C900 PVC)
- Stargrip Series 3000 (Ductile Iron)
- Sigma – One Lok (C900/905 PVC)
- Tyler Union Field Lock (Ductile Iron)
- Tyler Union Tufgrip 1000 (Ductile Iron)
- Tyler Union Tufgrip 2000 (PVC)

Restraint (Internal Joint Restrained) (all bolts, nuts and washers to be type 316 stainless-steel)

- Eagle LOC 900 for 4" thru 12" C900 DR14 PVC Pipe
- Diamond Lok-21 for 4" thru 12" C900 DR14 PVC Pipe

Corporation Valve (Stops)

Corporation Valves				
Size/Manufacturer	Mueller	Jones	Ford	A.Y. McDonald
¾-inch	B-25008	J-1937-SG	FB-1000-3-Q	4701BQ
1-inch	B-25008	J-1937-SG	FB-1000-4-Q	4701BQ
1 ½ -inch	B-25008	J-1937-SG	FB-1000-6-Q	4701BQ
2-inch	B-25008	J-1937-SG	FB-1000-7-Q	4701BQ

Angle Valves (Stops)

Angle Meter Valves				
Size/ Manufacturer	Mueller	Jones	Ford	A.Y. McDonald
¾-inch	B-24258	J-1963W-SG	BA43-332-WQ	4602BQ 3/4
1-inch	B-24258	J-1963W-SG	BA43-444-WQ	4602BQ 1
1 ½ -inch	B-24276	J-1975W-SG	BFA43-666-WQ	4602BQ 1 ½
2-inch	B-24276	J-1975W-SG	BFA43-777-WQ	4602BQ 2

Ductile Iron Fittings (Compact Only -C153)

- American Pipe
- Tyler Pipe Products
- Clow Products
- Star Pipe Products (tees, bends & anchor nipples)
- Sigma/Nappco Products (tees, bends & anchor nipples)
- Griffin Pipe Products

Valve Stacks and Boxes

- Bass & Hays adjustable valve box Model No. 2436S

Fire Hydrant Paint

Main Size	Color	Paint
6"	Silver – Top & Bottom	Sherwin Williams Silver-Brite Heavy Duty Rust Resistant Aluminum Paint B59S11
8"	Safety Blue Top – Aluminum Bottom	Sherwin Williams Heavy Duty Rust Resistant Aluminum Paint-Safety Blue B54T104
10" or larger	Yellow Top – Aluminum Bottom	Sherwin Williams Heavy Duty Rust Resistant Aluminum Paint-Safety Yellow B54Y37

Meter Boxes

< 1 inch Service	DFW1814F-1BA DFW Plastics, Inc Not Traffic Rated
1-1/2-inch, 2-inch Service	DFW2818F-1BA DFW Plastics, Inc Not Traffic Rated
Traffic Rated Meter Box	DFW65C-14-10BA DFW65C-1BA - Can DFW65C-Overlay-Lid DFW Plastics
Lids	DFW 18-AMRL-lid E Series

Approved Wastewater Materials List

Note: All specified materials on this list do not require separate submittals. All materials must be new and in good condition.

Wastewater Main and Service Pipe (Gravity Flow Only)

- ASTM D3034 SDR-35 PVC 4" to 15" Diameter (Green in color)
- ASTM D3034 SDR-26 PVC 18" to 30" Diameter and for any wastewater installed 10' and deeper (Green in color)
- ASTM D3262 Fiberglass Sewer Pipe 18" to 54" and ASTM 4161 Fiberglass Fittings (must submit thickness design for wall thickness calculations) Approved Manufacturers for Fiberglass Pipe and fitting are Hobas Pipe, US Composite Pipe South and Ameron International.

Manhole Pipe Connectors

- Link-Seal
- A-LOC
- KOR-N-SEAL – 306 Series By National Pollution Control Systems Inc.
- PS (Press-Seal) – PSX: Direct Drive

Wastewater Manhole Lids and Rings

- Pamrex with Lock
- East Jordan Iron Works 30" ERGO XL with Camlock Security closing device, MPIC Pick slot, elastomer T-Gasket in lid and infiltration plugs at the hinges. – Product No. 00148026L01
- East Jordan Iron Works 24" ERGO with Camlock Security closing device, MPIC Pick slot, elastomer T-Gasket in lid and infiltration plugs at the hinges – Product No. NPR10-1213A (for retrofit work only).

Manhole Coatings (No dark colors allowed)

- Raven 405 (125 mils thick)-light blue colored only
- ConShield-terra cotta colored only (must be spark tested per NACE International Standard)

Geotextile Material (installed under precast manholes)

- Mirafi 140N
- Geotex 401

Manhole Grade Rings

- HDPE Adjustment Rings by Ladtech Inc.
- ARPRO Expanded Polypropylene, ASTM D3575, by Cretex Seals
- East Jordan Iron Works Infra-Riser.

Pre-Cast Manhole Gaskets

- Hanson – CR 097
- Hydroconduit – Profile

Manhole Chimney Seals and Ring & Cover Sealing Systems

- Cretex with stainless steel self locking bands. (interior & exterior)
- Riser Wrap by PSI

Manhole Drop Bowl

- Reliner / Duran Inc., Inside Drop Bowl with Stainless Steel anchor assemblies
- Approved Equal

Cleanout

- Bass & Hays 404 Lateral Cleanout with lid and gasket
- Bass & Hays 339 Wastewater Cleanout Boot
- Stan Rober

Double Cleanout Meter Box

- Bass & Hays 3-LID2 (Sewer)
- Approved Equal

Threaded Anchor

- Hilti – KB3-SS304 5/8" anchor bolts or equal
- Stainless Steel all thread 5/8" (embedded min 4-1/2" into cone with a epoxy or Wedge-it)
- Simpson Strong Tie – Strong-Bolt 5/8"

Force Main Pipe

- AWWA C-905 pipe, green colored

Air Release Valve

- Vent-O-Mat Anti-Shock Air Release and Vacuum Break Valves
- Approved Equal

Isolation Gate Valve

- American-Series 2500 2"-12" Resilient Wedge Gate Valves with Flanged Ends
- Approved Equal

All exposed Stainless-Steel Bolts and Nuts must be coated with approved anti-seize compound: Permatex Nickel Anti-Seize or approved equal.

Materials not on this list will need to be submitted for review

Wage Rates

"General Decision Number: TX20250018 01/03/2025

Superseded General Decision Number: TX20240018

State: Texas

Construction Type: Heavy

Counties: Collin, Dallas, Denton, Ellis, Kaufman and Rockwall
Counties in Texas.

Water and Sewer Lines/Utilities (Including Related Tunneling
Where the Tunnel is 48" or Less in Diameter)

Note: Contracts subject to the Davis-Bacon Act are generally required to pay at least the applicable minimum wage rate required under Executive Order 14026 or Executive Order 13658. Please note that these Executive Orders apply to covered contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but do not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(1).

If the contract is entered into on or after January 30, 2022, or the contract is renewed or extended (e.g., an option is exercised) on or after January 30, 2022:	- Executive Order 14026 generally applies to the contract. - The contractor must pay all covered workers at least \$17.75 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in 2025.
If the contract was awarded on or between January 1, 2015 and January 29, 2022, and the contract is not renewed or extended on or after January 30, 2022:	- Executive Order 13658 generally applies to the contract. - The contractor must pay all covered workers at least \$13.30 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on that contract in 2025.

The applicable Executive Order minimum wage rate will be adjusted annually. If this contract is covered by one of the Executive Orders and a classification considered necessary for performance of work on the contract does not appear on this wage determination, the contractor must still submit a conformance request.

Additional information on contractor requirements and worker protections under the Executive Orders is available at <http://www.dol.gov/whd/govcontracts>.

Modification Number Publication Date
0 01/03/2025

PLUM0100-002 11/01/2024

	Rates	Fringes
Plumbers and Pipefitters.....	\$ 39.76	14.04

SUTX1991-004 09/23/1991

	Rates	Fringes
--	-------	---------

Laborers:

Common.....	\$ 7.25 **
Utility.....	\$ 7.467 **

Pipelaye.....\$ 7.828 **

Power equipment operators:

Backhoe.....	\$ 10.804 **
Crane.....	\$ 10.942 **
Front End Loader.....	\$ 9.163 **
Tunneling Machine (48" or less).....	\$ 9.163 **

TRUCK DRIVER.....\$ 8.528 **

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

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** Workers in this classification may be entitled to a higher minimum wage under Executive Order 14026 (\$17.75) or 13658 (\$13.30). Please see the Note at the top of the wage determination for more information. Please also note that the minimum wage requirements of Executive Order 14026 are not currently being enforced as to any contract or subcontract to which the states of Texas, Louisiana, or Mississippi, including their agencies, are a party.

Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at <https://www.dol.gov/agencies/whd/government-contracts>.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (iii)).

The body of each wage determination lists the classifications and wage rates that have been found to be prevailing for the type(s) of construction and geographic area covered by the wage determination. The classifications are listed in alphabetical order under rate identifiers indicating whether the particular rate is a union rate (current union negotiated rate), a survey rate, a weighted union average rate, a state adopted rate, or a supplemental classification rate.

Union Rate Identifiers

A four-letter identifier beginning with characters other than ""SU"", ""UAVG"", ?SA?, or ?SC? denotes that a union rate was prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2024. PLUM is an identifier of the union whose collectively bargained rate prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. The date, 07/01/2024 in the example, is the effective date of the most current negotiated rate.

Union prevailing wage rates are updated to reflect all changes over time that are reported to WHD in the rates in the collective bargaining agreement (CBA) governing the

classification.

Union Average Rate Identifiers

The UAVG identifier indicates that no single rate prevailed for those classifications, but that 100% of the data reported for the classifications reflected union rates. EXAMPLE: UAVG-OH-0010 01/01/2024. UAVG indicates that the rate is a weighted union average rate. OH indicates the State of Ohio. The next number, 0010 in the example, is an internal number used in producing the wage determination. The date, 01/01/2024 in the example, indicates the date the wage determination was updated to reflect the most current union average rate.

A UAVG rate will be updated once a year, usually in January, to reflect a weighted average of the current rates in the collective bargaining agreements on which the rate is based.

Survey Rate Identifiers

The ""SU"" identifier indicates that either a single non-union rate prevailed (as defined in 29 CFR 1.2) for this classification in the survey or that the rate was derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As a weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SUFL2022-007 6/27/2024. SU indicates the rate is a single non-union prevailing rate or a weighted average of survey data for that classification. FL indicates the State of Florida. 2022 is the year of the survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. The date, 6/27/2024 in the example, indicates the survey completion date for the classifications and rates under that identifier.

?SU? wage rates typically remain in effect until a new survey is conducted. However, the Wage and Hour Division (WHD) has the discretion to update such rates under 29 CFR 1.6(c)(1).

State Adopted Rate Identifiers

The ""SA"" identifier indicates that the classifications and prevailing wage rates set by a state (or local) government were adopted under 29 C.F.R 1.3(g)-(h). Example: SAME2023-007 01/03/2024. SA reflects that the rates are state adopted. ME refers to the State of Maine. 2023 is the year during which the state completed the survey on which the listed classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. The date, 01/03/2024 in the example, reflects the date on which the classifications and rates under the ?SA? identifier took effect under state law in the state from which the rates were adopted.

WAGE DETERMINATION APPEALS PROCESS

1) Has there been an initial decision in the matter? This can be:

- a) a survey underlying a wage determination
- b) an existing published wage determination
- c) an initial WHD letter setting forth a position on a wage determination matter
- d) an initial conformance (additional classification and rate) determination

On survey related matters, initial contact, including requests for summaries of surveys, should be directed to the WHD Branch of Wage Surveys. Requests can be submitted via email to davisbaconinfo@dol.gov or by mail to:

Branch of Wage Surveys
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

Regarding any other wage determination matter such as conformance decisions, requests for initial decisions should be directed to the WHD Branch of Construction Wage Determinations. Requests can be submitted via email to BCWD-Office@dol.gov or by mail to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2) If an initial decision has been issued, then any interested party (those affected by the action) that disagrees with the decision can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Requests for review and reconsideration can be submitted via email to dba.reconsideration@dol.gov or by mail to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210.

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END OF GENERAL DECISION"

"General Decision Number: TX20250025 01/03/2025

Superseded General Decision Number: TX20240025

State: Texas

Construction Type: Highway

Counties: Archer, Callahan, Clay, Collin, Dallas, Delta, Denton, Ellis, Grayson, Hunt, Johnson, Jones, Kaufman, Parker, Rockwall, Tarrant and Wise Counties in Texas.

HIGHWAY CONSTRUCTION PROJECTS (excluding tunnels, building structures in rest area projects & railroad construction; bascule, suspension & spandrel arch bridges designed for commercial navigation, bridges involving marine construction; and other major bridges).

Note: Contracts subject to the Davis-Bacon Act are generally required to pay at least the applicable minimum wage rate required under Executive Order 14026 or Executive Order 13658. Please note that these Executive Orders apply to covered contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but do not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(1).

If the contract is entered into on or after January 30, 2022, or the contract is renewed or extended (e.g., an option is exercised) on or after January 30, 2022:	. Executive Order 14026 generally applies to the contract. . The contractor must pay all covered workers at least \$17.75 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in 2025.
If the contract was awarded on or between January 1, 2015 and January 29, 2022, and the contract is not renewed or extended on or after January 30, 2022:	. Executive Order 13658 generally applies to the contract. . The contractor must pay all covered workers at least \$13.30 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on that contract in 2025.

The applicable Executive Order minimum wage rate will be adjusted annually. If this contract is covered by one of the Executive Orders and a classification considered necessary for performance of work on the contract does not appear on this wage determination, the contractor must still submit a conformance request.

Additional information on contractor requirements and worker protections under the Executive Orders is available at <http://www.dol.gov/whd/govcontracts>.

Modification Number Publication Date
0 01/03/2025

SUTX2011-007 08/03/2011

	Rates	Fringes
CONCRETE FINISHER (Paving and Structures).....	\$ 14.12	**
ELECTRICIAN.....	\$ 19.80	
FORM BUILDER/FORM SETTER		
Paving & Curb.....	\$ 13.16	**
Structures.....	\$ 13.84	**
LABORER		
Asphalt Raker.....	\$ 12.69	**
Flagger.....	\$ 10.06	**
Laborer, Common.....	\$ 10.72	**
Laborer, Utility.....	\$ 12.32	**
Pipelayer.....	\$ 13.24	**
Work Zone Barricade Servicer.....	\$ 11.68	**
POWER EQUIPMENT OPERATOR:		
Asphalt Distributor.....	\$ 15.32	**
Asphalt Paving Machine.....	\$ 13.99	**
Broom or Sweeper.....	\$ 11.74	**
Concrete Pavement Finishing Machine.....	\$ 16.05	**
Concrete Saw.....	\$ 14.48	**
Crane Operator, Lattice Boom 80 Tons or Less.....	\$ 17.27	**
Crane Operator, Lattice Boom over 80 Tons.....	\$ 20.52	
Crane, Hydraulic 80 Tons or Less.....	\$ 18.12	
Crawler Tractor.....	\$ 14.07	**
Excavator, 50,000 pounds or less.....	\$ 17.19	**
Excavator, over 50,000 pounds.....	\$ 16.99	**

Foundation Drill , Truck Mounted.....	\$ 21.07
Foundation Drill, Crawler Mounted.....	\$ 17.99
Front End Loader 3 CY or Less.....	\$ 13.69 **
Front End Loader, over 3 CY....	\$ 14.72 **
Loader/Backhoe.....	\$ 15.18 **
Mechanic.....	\$ 17.68 **
Milling Machine.....	\$ 14.32 **
Motor Grader, Fine Grade.....	\$ 17.19 **
Motor Grader, Rough.....	\$ 16.02 **
Pavement Marking Machine....	\$ 13.63 **
Reclaimer/Pulverizer.....	\$ 11.01 **
Roller, Asphalt.....	\$ 13.08 **
Roller, Other.....	\$ 11.51 **
Scraper.....	\$ 12.96 **
Small Slipform Machine.....	\$ 15.96 **
Spreader Box.....	\$ 14.73 **
 Servicer.....	 \$ 14.58 **
 Steel Worker (Reinforcing).....	 \$ 16.18 **

TRUCK DRIVER

Lowboy-Float.....	\$ 16.24 **
Off Road Hauler.....	\$ 12.25 **
Single Axle.....	\$ 12.31**
Single or Tandem Axle Dump Truck.....	\$ 12.62 **
Tandem Axle Tractor with Semi Trailer.....	\$ 12.86 **
Transit-Mix.....	\$ 14.14 **

WELDER.....\$ 14.84 **

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

=====

** Workers in this classification may be entitled to a higher minimum wage under Executive Order 14026 (\$17.75) or 13658 (\$13.30). Please see the Note at the top of the wage determination for more information. Please also note that the minimum wage requirements of Executive Order 14026 are not currently being enforced as to any contract or subcontract to which the states of Texas, Louisiana, or Mississippi, including their agencies, are a party.

Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this

contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at <https://www.dol.gov/agencies/whd/government-contracts>.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (iii)).

The body of each wage determination lists the classifications and wage rates that have been found to be prevailing for the type(s) of construction and geographic area covered by the wage determination. The classifications are listed in alphabetical order under rate identifiers indicating whether the particular rate is a union rate (current union negotiated rate), a survey rate, a weighted union average rate, a state adopted rate, or a supplemental classification rate.

Union Rate Identifiers

A four-letter identifier beginning with characters other than ""SU"", ""UAVG"", ?SA?, or ?SC? denotes that a union rate was prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2024. PLUM is an identifier of the union whose collectively bargained rate prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. The date, 07/01/2024 in the example, is the effective date of the most current negotiated rate.

Union prevailing wage rates are updated to reflect all changes over time that are reported to WHD in the rates in the collective bargaining agreement (CBA) governing the classification.

Union Average Rate Identifiers

The UAVG identifier indicates that no single rate prevailed for those classifications, but that 100% of the data reported for the classifications reflected union rates. EXAMPLE: UAVG-OH-0010 01/01/2024. UAVG indicates that the rate is a weighted union average rate. OH indicates the State of Ohio. The next number, 0010 in the example, is an internal number used in producing the wage determination. The date, 01/01/2024 in the example, indicates the date the wage determination was updated to reflect the most current union average rate.

A UAVG rate will be updated once a year, usually in January, to reflect a weighted average of the current rates in the collective bargaining agreements on which the rate is based.

Survey Rate Identifiers

The ""SU"" identifier indicates that either a single non-union rate prevailed (as defined in 29 CFR 1.2) for this classification in the survey or that the rate was derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As a weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SUFL2022-007 6/27/2024. SU indicates the rate is a single non-union prevailing rate or a weighted average of survey data for that classification. FL indicates the State of Florida. 2022 is the year of the survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. The date, 6/27/2024 in the example, indicates the survey completion date for the classifications and rates under that identifier.

?SU? wage rates typically remain in effect until a new survey is conducted. However, the Wage and Hour Division (WHD) has the discretion to update such rates under 29 CFR 1.6(c)(1).

State Adopted Rate Identifiers

The ""SA"" identifier indicates that the classifications and prevailing wage rates set by a state (or local) government were adopted under 29 C.F.R 1.3(g)-(h). Example: SAME2023-007 01/03/2024. SA reflects that the rates are state adopted. ME refers to the State of Maine. 2023 is the year during which the state completed the survey on which the listed classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. The date, 01/03/2024 in the example, reflects the date on which the classifications and rates under the ?SA? identifier took effect under state law in the state from which the rates were adopted.

WAGE DETERMINATION APPEALS PROCESS

1) Has there been an initial decision in the matter? This can be:

- a) a survey underlying a wage determination
- b) an existing published wage determination
- c) an initial WHD letter setting forth a position on a wage determination matter
- d) an initial conformance (additional classification and rate) determination

On survey related matters, initial contact, including requests for summaries of surveys, should be directed to the WHD Branch of Wage Surveys. Requests can be submitted via email to davisbaconinfo@dol.gov or by mail to:

Branch of Wage Surveys
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

Regarding any other wage determination matter such as conformance decisions, requests for initial decisions should be directed to the WHD Branch of Construction Wage Determinations. Requests can be submitted via email to BCWD-Office@dol.gov or by mail to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2) If an initial decision has been issued, then any interested party (those affected by the action) that disagrees with the decision can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Requests for review and reconsideration can be submitted via email to dba.reconsideration@dol.gov or by mail to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210.

=====

END OF GENERAL DECISION"

**GEOTECHNICAL ENGINEERING STUDY
N. LAKESHORE DRIVE RECONSTRUCTION
MASTERS BOULEVARD TO W. RUSK STREET
ROCKWALL, TEXAS**

Presented To:

Kimley-Horn & Associates, Inc.

October 2024

PROJECT NO. 103-24-553



October 10, 2024
Report No. 103-24-553

Kimley-Horn & Associates, Inc.
225 E. John W. Carpenter Fwy., Suite 1100
Irving, Texas 75062

Attn: Mr. Jacob Reinig, P.E.

**GEOTECHNICAL ENGINEERING STUDY
N. LAKESHORE DRIVE RECONSTRUCTION
MASTERS BOULEVARD TO W. RUSK STREET
ROCKWALL, TEXAS**

Dear Mr. Reinig:

Submitted here are the results of a geotechnical engineering study for the referenced project. This study was performed in general accordance with CMJ Proposal 24-9601 dated May 14, 2024. The geotechnical services were authorized via Individual Project Order (IPO) No. 064420919-730.

Engineering analyses and recommendations are contained in the text section of the report. Results of our field and laboratory services are included in the appendix of the report. We would appreciate the opportunity to be considered for providing the materials engineering and geotechnical observation services during the construction phase of this project.

We appreciate the opportunity to be of service to Kimley Horn & Associates, Inc. Please contact us if you have any questions or if we may be of further service at this time.

Respectfully submitted,
CMJ ENGINEERING, INC.
TEXAS FIRM REGISTRATION NO. F-9177

Zachary Koerth, E.I.T.
Geotechnical Project Manager
Texas E.I.T. No. 79231

Matthew W. Kammerdiener, P.E.
Senior Engineer
Texas No. 127818



copies submitted: (2) Mr. Jacob Reinig, P.E.; Kimley-Horn & Associates, Inc. (email & mail)

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TABLE OF CONTENTS

	<u>Page</u>
1.0 INTRODUCTION -----	1
2.0 FIELD EXPLORATION AND LABORATORY TESTING-----	2
3.0 SUBSURFACE CONDITIONS -----	3
4.0 RETAINING WALL STRUCTURES-----	5
5.0 PAVEMENTS-----	9
6.0 UTILITY EXCAVATIONS -----	14
7.0 EARTHWORK-----	17
8.0 CONSTRUCTION OBSERVATIONS-----	21
9.0 REPORT CLOSURE -----	21

APPENDIX A

	<u>Plate</u>
Plan of Borings -----	A.1
Unified Soil Classification System -----	A.2
Key to Classification and Symbols -----	A.3
Logs of Borings -----	A.4 – A.18
Lime Series Test Results -----	A.19 – A.20
Soluble Sulfate Test Results-----	A.21

1.0 INTRODUCTION

1.1 General

The project, as currently planned, will consist of the reconstruction of N. Lakeshore Drive from Masters Boulevard to W. Rusk Street in Rockwall, Texas. New pavement surfacing will consist of Portland cement concrete (PCC). Additionally, utilities beneath N. Lakeshore Drive will be replaced. Plate A.1, Plan of Borings, depicts the project vicinity and locations of the exploration borings.

1.2 Purpose and Scope

The purpose of this geotechnical engineering study has been to determine the general subsurface conditions, evaluate the engineering characteristics of the subsurface materials encountered, develop recommendations for the type or types of foundations suitable for the project, provide pavement design guidelines, and earthwork recommendations.

To accomplish its intended purposes, the study has been conducted in the following phases: (1) drilling sample borings to determine the general subsurface conditions and to obtain samples for testing; (2) performing laboratory tests on appropriate samples to determine pertinent engineering properties of the subsurface materials; and (3) performing engineering analyses, using the field and laboratory data to develop geotechnical recommendations for the proposed construction.

The design is currently in progress and the locations and/or elevations of the structures could change. Once the final design is near completion (80-percent to 90-percent stage), it is recommended that CMJ Engineering, Inc. be retained to review those portions of the construction documents pertaining to the geotechnical recommendations, as a means to determine that our recommendations have been interpreted as intended.

1.3 Report Format

The text of the report is contained in Sections 1 through 9. All plates and large tables are contained in Appendix A. The alpha-numeric plate and table numbers identify the appendix in which they appear. Small tables of less than one page in length may appear in the body of the text and are numbered according to the section in which they occur.

Units used in the report are based on the English system and may include tons per square foot (tsf), kips (1 kip = 1,000 pounds), kips per square foot (ksf), pounds per square foot (psf), pounds per cubic foot (pcf), and pounds per square inch (psi).

2.0 FIELD EXPLORATION AND LABORATORY TESTING

2.1 Field Exploration

Subsurface materials at the project site were explored by fifteen (15) vertical soil borings drilled to a depth of 10 feet. The borings were drilled using continuous flight augers at the approximate location shown on the Plan of Borings, Plate A.1. The boring logs are included on Plates A.4 through A.18 and keys to classifications and symbols used on the logs are provided on Plates A.2 and A.3.

Undisturbed samples of cohesive soils were obtained with nominal 3-inch diameter thin-walled (Shelby) tube samplers at the locations shown on the logs of borings. The Shelby tube sampler consists of a thin-walled steel tube with a sharp cutting edge connected to a head equipped with a ball valve threaded for rod connection. The tube is pushed into the soil by the hydraulic pulldown of the drilling rig. The soil specimens were extruded from the tube in the field, logged, tested for consistency with a hand penetrometer, sealed, and packaged to limit loss of moisture.

The consistency of cohesive soil samples was evaluated in the field using a calibrated hand penetrometer. In this test a 0.25-inch diameter piston is pushed into the relatively undisturbed sample at a constant rate to a depth of 0.25 inch. The results of these tests, in tsf, are tabulated at respective sample depths on the log. When the capacity of the penetrometer is exceeded, the value is tabulated as 4.5+.

To evaluate the relative density and consistency of the harder formations, a modified version of the Texas Cone Penetration test was performed at selected locations. Texas Department of Transportation (TxDOT) Test Method Tex-132-E specifies driving a 3-inch diameter cone with a 170-pound hammer freely falling 24 inches. This results in 340 foot-pounds of energy for each blow. This method was modified by utilizing a 140-pound hammer freely falling 30 inches. This results in 350 foot-pounds of energy for each hammer blow. In relatively soft materials, the penetrometer cone is driven 1 foot and the number of blows required for each 6-inch penetration is tabulated at respective test depths, as blows per 6 inches on the log. In hard materials (rock or rock-like), the penetrometer cone is driven with the resulting penetrations, in inches, recorded for the first and

second 50 blows, a total of 100 blows. The penetration for the total 100 blows is recorded at the respective testing depths on the boring logs.

Ground water observations during and after completion of the borings are shown on the upper right of the boring logs. Upon completion of the borings, the bore holes were backfilled with sand and plugged at the surface with concrete.

2.2 Laboratory Testing

Laboratory soil tests were performed on selected representative samples recovered from the borings. In addition to the classification tests (liquid limits and plastic limits), moisture content, unconfined compressive strength, and unit weight tests were performed. Results of the laboratory classification tests, moisture content, unconfined compressive strength, and unit weight tests conducted for this project are included on the boring logs.

Eades and Grim Lime Series testing was performed on selected samples to identify the appropriate concentration of lime to add to soils for modification purposes. The results of the lime series tests are presented on Plates A.19 and A.20.

Soluble sulfate tests were conducted on selected soil samples recovered from the borings. The sulfate testing was conducted to help identify lime-induced heaving potential of the soils. Lime-induced heaving can cause detrimental volumetric changes to a lime modified subgrade. The results of the sulfate tests are presented on Plate A.21.

The above laboratory tests were performed in general accordance with applicable ASTM procedures, or generally accepted practice.

3.0 SUBSURFACE CONDITIONS

3.1 Soil Conditions

Specific types and depths of subsurface stratigraphy encountered at the boring locations are shown on the boring logs in Appendix A. The generalized subsurface stratigraphy encountered in the borings are discussed below. Note that depths on the borings refer to the depth from the existing grade or ground surface present at the time of the investigation, and the boundaries between the various soil types are approximate.

The borings were drilled in the existing pavement along N. Lake Shore Drive. The pavement section consists of 4¾ to 8 inches of concrete in the borings. No base materials were encountered. Lime-treatment was detected by indicator beneath the paving in Borings B-1, B-2, B-6, B-7, B-10, and B-15.

Soils encountered in the borings consist of dark brown, brown, light brown, light reddish brown, olive-brown, and gray silty clays and clays of moderate to high plasticity. The various clays occasionally contain iron seams, ironstone nodules, calcareous nodules, pebbles, and occasional limestone fragments and iron stains. Sand seams were noted within the clays in Boring B-7 below a depth of 8 feet. Borings B-2 through B-7 and B-10 through B-15 were terminated in the natural soils at a depth of 10 feet.

The various clay soils encountered in the borings had Liquid Limits (LL) ranging from 46 to 59 with Plasticity Indices (PI) ranging from 25 to 41 and are classified as CL and CH by the USCS. The various clay soils are generally very stiff to hard (soil basis) in consistency with pocket penetrometer readings of 3.0 to over 4.5 tsf. Tested unit weight values varied from 89 to 112 pcf and unconfined compressive strengths ranged from 5,030 to 8,640 psf.

Soft gray clayey shale or sandy clayey shale was encountered in Borings B-1 and B-9 at a depth of 6 to 8 feet. The gray clayey shale is soft (rock basis) with a pocket penetrometer reading of over 4.5 tsf. Gray shale is next encountered in Borings B-1 and B-8 at depths of 5 to 8 feet. The gray shale is considered moderately hard (rock basis), with Texas Cone Penetrometer (THD) values of 2¾ to 3¾ inches per 100 blows. Borings B-1, B-8, and B-9 were terminated within the gray shale or sandy clayey shale at a depth of 10 feet.

The Atterberg Limits tests indicate the various clays encountered at this site are moderately to highly active with respect to moisture induced volume changes. Active clays can experience volume changes (expansion or contraction) with fluctuations in their moisture content.

3.2 Ground Water Observations

The borings were drilled using continuous flight augers in order to observe groundwater seepage during drilling. Groundwater was not encountered in the borings during drilling and all borings were dry at drilling completion.

While it is not possible to accurately predict the magnitude of subsurface water fluctuation that might occur based upon these short-term observations, it should be recognized that groundwater conditions will vary with fluctuations in rainfall. Seepage near the observed levels should be anticipated throughout the year.

Fluctuations of the groundwater level can occur due to seasonal variations in the amount of rainfall; site topography and runoff; hydraulic conductivity of soil strata; and other factors not evident at the time the borings were performed. The possibility of groundwater level fluctuations should be considered when developing the design and construction plans for the project.

4.0 RETAINING WALL STRUCTURES

4.1 Foundations

The retaining wall foundations may be supported on footings founded in the natural soils at least 2 feet below existing grade. The retaining wall foundations may be designed for an allowable bearing pressure of 1,800 psf. Soils existing in a soft to firm state should be evaluated on a case-by-case basis. Close inspection of soil strength should be conducted by a geotechnical engineer to allow designation and removal of soft soils not meeting the bearing capacity stated above. The base of all excavated footings should be inspected by a geotechnical engineer or geotechnician under his or her supervision to assure that the bottom is firm, level and free of loose soil material and/or debris.

It should be noted that retaining wall foundations are typically subjected to non-uniform pressure across the foundation, and possibly negative pressure (separation of foundation from soil) under a portion of the foundation, due to the overturning moment induced by the lateral earth pressures. The allowable foundation pressures given above are for the maximum pressure induced by the foundation loads, and not the average pressure under the foundation base.

The horizontal bases of the footings will develop resistance to sliding by means of a combination of friction and adhesion (for cohesive foundation materials). Given the nature of the foundation materials, an adhesion of 500 psf may be used for earth formed footings. An ultimate friction factor of 0.3 may be used to calculate sliding resistance of the footings bearing on site clay soils.

Sliding resistance may be increased in areas where keyways are present beneath the wall footings. The vertical earth-formed sides of keyways will resist lateral forces by developing passive earth pressures. A passive lateral earth pressure coefficient of 2.0 should be used for passive resistance calculations where passive resistance is developed against a vertical earth-formed side of a keyway, based on a soil unit weight of 125 pcf, per foot of footing height.

Foundations for the retaining walls designed in accordance with these recommendations will have a minimum factor of safety of 3 with respect to a bearing capacity failure and should experience a total settlement of 1 inch or less and a differential settlement of ½ inch or less, after construction.

4.2 Lateral Earth Pressures

4.2.1 General

The below grade and retaining walls must be designed for lateral pressures including, but not necessarily limited to, earth, water, surcharge, swelling, and vibration. In addition, the lateral pressures will be influenced by whether the backfill is drained or undrained, and above or below the groundwater table.

4.2.2 Equivalent Fluid Pressures

Lateral earth pressures on below grade and retaining walls will depend on a variety of factors, including the type of soils behind the wall, the condition of the soils, and the drainage conditions behind the wall. Recommended lateral earth pressures expressed as equivalent fluid pressures, per foot of wall height, are presented in Table 4.2.2-1 for a wall with a level backfill behind the top of the wall. The equivalent fluid pressure for an undrained condition should be used if a drainage system is not present to remove water trapped in the backfill and behind the wall. Pressures are provided for at-rest and active earth pressure conditions. Rigid walls are not anticipated to develop enough movement to mobilize active earth pressures. In order to allow for an active condition the top of the wall(s) must deflect on the order of 0.4 percent.

For the select fill or free draining granular backfill these values assume that a “full” wedge of the material is present behind the wall. The wedge is defined where the wall backfill limits extend outward at least 2 feet from the base of the wall and then upward on a 1H:2V slope. For narrower backfill widths of granular or select fill soils, the equivalent fluid pressures for the on-site soils should be used

TABLE 7.2.2-1 – Equivalent Fluid Pressures				
Backfill Material	At-Rest Equivalent Fluid Pressure (pcf)		Active Equivalent Fluid Pressure (pcf)	
	Drained	Undrained	Drained	Undrained
Excavated on-site clay or clay fill material	100	110	85	100
Select fill or on-site soils meeting material specifications	65	90	50	85
Free draining granular backfill material	50	90	35	80

4.2.3 Additional Lateral Pressures

The location and magnitude of permanent surcharge loads (if present) should be determined, and the additional pressure generated by these loads such as the weight of construction equipment and vehicular loads that are used at the time the structures are being built must also be considered in the design. The effect of this or any other surcharge loading may be accounted for by adding an additional uniform load to the full depth of the side walls equivalent to one-half of the expected vertical surcharge intensity for select backfill materials, or equal to the full vertical surcharge intensity for clay backfill. The equivalent fluid pressures, given here, do not include a safety factor. Analysis of surcharge loads (if any) should be performed on a case-by-case basis. This is not included in the scope of this study. These services can be provided as additional services upon request.

4.3 Wall Backfill Material Requirements

Granular Wall Backfill: All free draining granular wall backfill material should be a crushed stone, sand/gravel mixture, or sand/crushed stone mixture. The material should have less than 3 percent passing the No. 200 sieve and less than 30 percent passing the No. 40 sieve. The minus No. 40 sieve material should be non-plastic. Granular wall backfill should not be water jetted during installation.

Select Fill Behind Walls: All wall select backfill should consist of clayey sand and/or sandy clay material with a Plasticity Index of 16 or less, with a Liquid Limit not exceeding 35 percent. The select fill should be placed in maximum 8-inch lifts and compacted to between 95 and 100 percent of Standard Proctor density (ASTM D698) within a moisture range of plus to minus 3 percentage points of the optimum moisture. Compaction within five feet of the walls should be accomplished using

hand compaction equipment and should be compacted between 90 and 95 percent of the Standard Proctor density.

On-Site Soil Backfill: For wall backfill areas with site-excavated materials or similar imported materials, all oversized fragments larger than four inches in maximum dimension should be removed from the backfill materials prior to placement. The backfill should be free of all organic and deleterious materials, and should be placed in maximum 8-inch compacted lifts at a minimum of 95 percent of Standard Proctor density (ASTM D698) within a moisture range of plus to minus 3 percentage points of optimum moisture. Compaction within five feet of the walls should be accomplished using hand compaction equipment, and should be between 90 and 95 percent of the Standard Proctor Density.

4.4 Wall Backfill Settlement

Settlement of the wall backfill should be anticipated. Piping and conduits through the fill should be designed for potential soil loading due to fill settlement. Floor slabs, sidewalls, and pavements over fills may also settle. Backfill compacted to the density recommended above is anticipated to settle on the order of 0.2 to 0.5 percent of the fill thickness.

4.5 Below-Grade Drainage Requirements

The design recommendations presented above assume hydrostatic pressure will not develop behind the retaining walls. In order to achieve the “drained” condition for lateral earth pressure for low-permeability walls (concrete, masonry, etc.), a vertical drainage blanket or geocomposite drainage member must be installed adjacent to the wall on the backfill side. Drainage could be provided using a collector pipe or weep holes near the base of the retaining wall. Drains should be properly filtered to minimize the potential for erosion through these drains, and /or the plugging of drain lines. Design or specific recommendations for drainage members is beyond the scope for this study. These services can be provided as an additional service upon request. In order to achieve the “drained” condition, the entire backfill material must be free draining. It is recommended the backfill-wall geometry be such that the backfill will not become saturated from rainfall, ground water, adjacent water courses, or other sources.

5.0 PAVEMENTS

5.1 Pavement Subgrade Considerations

5.1.1 General

Pavement performance depends upon several factors including: the characteristics of the supporting soil; the magnitude and frequency of wheel load applications; the quality of construction materials; the contractor's placement and workmanship abilities; and the desired period of design life. The success of the pavement subgrade depends upon subgrade soil strength and control of water. Adequate subgrade performance can be achieved by modifying or stabilizing the existing soils used to construct the pavement subgrade.

Pavement sections are susceptible to edge distress as edge support deteriorates over time. Therefore, care must be taken to provide and maintain proper edge support. In conjunction with a stabilized subgrade underlying the pavement, it is recommended that the stabilized subgrade extend a minimum of 12 inches beyond the riding surface on each side of the proposed pavement. Maintenance should be provided when edge support deteriorates.

5.1.2 Subgrade Preparation Options

Anticipated subgrade materials generally consist of clays of moderate to high plasticity. These moderately to highly plastic clays are subject to loss in support value with the moisture increases which occur beneath pavement sections. They react with hydrated lime, which serves to improve and maintain their support value. Treatment of these soils with hydrated lime will improve their subgrade characteristics to support area paving.

Alternatively, in lieu of a lime stabilized subgrade, a flexible base meeting TxDOT Item 247, Type A, Grade 1/2 may be utilized on an equal basis. The option of using a flexible base in lieu of lime stabilizing the subgrade presents a relatively quick, straight forward solution to preparing the subgrade prior to pavement placement.

5.2 Potential Vertical Movements

Estimates of expansive movement potential have been estimated using TxDOT Test Method Tex 124-E. Potential vertical movements ranging from on the order of 2 to 4 inches are estimated. Movements in excess of the estimated value can occur if poor drainage, excessive water collection, leaking pipelines, etc. occur. Any such excessive water conditions should be rectified as soon as

possible. In order to minimize rainwater infiltration through the pavement surface, and thereby minimizing future upward movement of the pavement slabs, all cracks and joints in the pavement should be sealed on a routine basis after construction.

5.3 Sulfate-Induced Heaving

Soluble sulfate testing was conducted to check for sulfate-induced heaving potential. Sulfate-induced heaving is caused when hydrated lime is added to a soil with high sulfate concentration. The lime reacts with the sulfates to cause potentially large volumetric changes in the soil.

Soluble sulfate levels in soils on the order of 1,000 parts-per-million (ppm) or less are usually of low concern and warrant only observation of the subgrade during the stabilization process. The soluble sulfate levels of the tested samples were less than 100 ppm. Since the samples tested were below 1,000 ppm, a single treatment process is recommended at this time. The single treatment is described in Section 5.4. In addition, it is recommended that during the curing period of the lime treatment, the subgrade be supplied with ample moisture to allow proper hydration, and it should be checked for any volumetric changes that may indicate a sulfate-induced heaving condition.

5.4 Pavement Subgrade Preparation

Lime stabilization of the existing clay subgrade soils or installation of a suitable flexible base is recommended for all subgrade areas. Prior to lime addition or installation of flexible base, the subgrade should be proofrolled with heavy pneumatic equipment weighing approximately 15 tons. Any soft or pumping areas should be undercut to a firm subgrade and properly backfilled as described Section 7.0.

The subgrade, stabilized or unstabilized, should be scarified to a minimum depth of 6 inches and uniformly compacted to a minimum of 95 percent of Standard Proctor density (ASTM D698), between minus 2 to plus 4 percentage points of the optimum moisture content determined by that test. It should then be protected and maintained in a moist condition until the pavement is placed.

It is recommended a minimum of 8 percent hydrated lime be used to modify the clay subgrade soils. The estimated amount of hydrated lime required to stabilize the subgrade should be on the order of 36 pounds per square yard for a 6-inch depth, based on a soil dry unit weight of 100 pcf. The hydrated lime should be thoroughly mixed and blended with the upper 6 inches of the clay subgrade (TxDOT Item 260). The hydrated lime should meet the requirements of Item 260 (Type A) in the

Texas Department of Transportation (TxDOT) Standard Specifications for Construction of Highways, Streets and Bridges, 2014 Edition. Calcareous nodules, ironstone nodules, pebbles, and limestone fragments in the surficial clays can complicate mixing of the soil and lime.

Flexible base should meet the criteria in TxDOT Item 247, Type A, Grade 1/2 materials; compacted to at least 95 percent of Standard Proctor density and at a moisture content between minus 2 to plus 5 percentage points of the optimum moisture value.

It is recommended that subgrade stabilization extend to at least one foot beyond pavement edges to aid in reducing pavement movements and cracking along the curb line due to seasonal moisture variations after construction. Each construction area should be shaped to allow drainage of surface water during earthwork operations, and surface water should be pumped immediately from each construction area after each rain and a firm subgrade condition maintained. Water should not be allowed to pond in order to prevent percolation and subgrade softening, and subgrade treatments should be added to the subgrade after removal of all surface vegetation and debris. Sand should be specifically prohibited beneath pavement areas, since these more porous soils can allow water inflow, resulting in heave and strength loss of subgrade soils (lime stabilized soil will be allowed for fine grading). After fine grading each area in preparation for paving, the subgrade surface should be lightly moistened, as needed, and recompact to obtain a tight non-yielding subgrade.

Surface drainage is critical to the performance of this pavement. Water should be allowed to exit the pavement surface quickly. All pavement construction should be performed in accordance with the procedures provided in Section 5.6.

5.5 Pavement Sections

At the time of this investigation, site paving plans or vehicle traffic studies were not available. Pavement analyses were performed using methods outlined in the AASHTO Guide for Design of Pavement Structures, 1993 Edition, published by the American Association of State Highway and Transportation Officials. The design equations were solved using AASHTO Pavement Analysis Software. In the AASHTO method, traffic loads are expressed in Equivalent 18-kip Single Axle Loads (ESAL) over the design life of the pavement structure.

Based on the results of the field and laboratory investigation, and on soil plasticity properties, the following design parameters were used in our thickness design calculations (soil parameters were conservatively established for the soils that are expected to exhibit lower bearing strengths):

Subgrade Soils	Clay
Initial Serviceability	4.5
Terminal Serviceability	2.5
Reliability	90%
Overall Deviation	0.39
Load Transfer Coefficient	3.2
Drainage Coefficient	1.0
Assumed CBR value of subgrade soil.....	3
Assumed CBR value of LSS (or flex base)	20
Concrete Modulus of Rupture	600 psi

The following alternative pavement sections are provided for a range of traffic volumes. The traffic loadings are based on the daily frequency of fully loaded, 80 kip, five-axle tractor semi-trailers over the 20- or 30-year service period. These sections are suitable for the previously mentioned assumptions. Any deviation from these assumptions should be brought to our attention immediately in order to assess their impact on our recommendations.

Pavement Section	Design ESAL	Allowable Daily Truck Repetitions (30-Year Life)
8" PCC over 6" lime stabilized (or flexible base) subgrade ⁽¹⁾	1,939,100	73
9" PCC over 6" lime stabilized (or flexible base) subgrade	3,886,100	147
10" PCC over 6" lime stabilized (or flexible base) subgrade ⁽²⁾	7,434,400	283

Note: (1) City of Rockwall minimum pavement section for Collector Classification.
(2) City of Rockwall minimum pavement section for Arterial Classification.

5.6 Pavement Material Requirements

Material and process specifications developed by the Texas Department of Transportation (TxDOT) have been utilized. These specifications are outlined in the TxDOT Standard Specifications for Construction of Highways, Streets and Bridges, 2014 Edition. Specific construction recommendations for pavements are given below.

Reinforced Portland Cement Concrete: Reinforced Portland cement concrete pavement should consist of Portland cement concrete having a 28-day compressive strength of at least 3,600 psi. The mix should be designed in accordance with the ACI Code 318 using 3 to 6 percent air entrainment. The pavement should be adequately reinforced with temperature steel and all construction joints or expansion/contraction joints should be provided with load transfer dowels. The spacing of the joints will depend primarily on the type of steel used in the pavement. We recommend using No. 4 steel rebar spaced at 18 inches on center in both the longitudinal and transverse direction, in accordance with the City of Rockwall specifications. Control joints formed by sawing are recommended every 12 to 15 feet in both the longitudinal and transverse direction. The cutting of the joints should be performed as soon as the concrete has “set-up” enough to allow for sawing operations.

Lime Stabilized Subgrade: Lime treatment for base course (road mix) - Item 260, Texas Department of Transportation Standard Specifications for Construction and Maintenance of Highways, Streets, and Bridges, 2014 Edition.

Flexible Base: Crushed Stone Flexible Base – Item 247, Type A, Grade 1/2, Texas Department of Transportation Standard Specifications for Construction of Maintenance of Highways, Streets, and Bridges, 2014 Edition.

5.7 General Pavement Construction and Considerations

The design of the pavement drainage and grading should consider the potential for differential ground movement due to future soil swelling of up to 4 inches. In order to minimize rainwater infiltration through the pavement surface, and thereby minimizing future upward movement of the pavement slabs, all cracks and joints in the pavement should be sealed on a routine basis after construction.

Reductions in anticipated movements can be achieved by using methods developed in this area to reduce on-grade slab/pavement movements such as water injection, chemical injection, or mechanical reworking of the expansive clays. These methods of treatment are options for the owner's consideration. The options may or may not be practical or economically feasible. The owner should be aware that these methods will not prevent movement of soil-supported pavements and can only reduce the magnitude of the movement. Contact CMJ for additional recommendations should such pavement movement reduction measures be desired.

Proper surface drainage in the shoulders is also critical to long term performance of the pavement. Water allowed to pond adjacent to the pavement will result in loss of edge and subgrade support and an increase in post construction heave of the pavement.

6.0 UTILITY EXCAVATIONS

6.1 Expected Subsurface Conditions

The soil materials (clays and silty clays) can be excavated by conventional methods including the use of large backhoes, bulldozers, track, or wheel loaders. Heavy-duty excavation equipment may be necessary within the gray shale materials encountered in Borings B-1, B-8, and B-9 below depths of 5 to 8 feet.

The gray shales are moderately hard (rock basis) and may present difficulty with rippability using normal excavation equipment. Special techniques for ripping/rock removal can be expected through the shale.

6.2 Open Excavation Considerations

The trench excavations should be performed in accordance with OSHA Safety and Health Standards (29 CFR 1926/1919), Subpart P. For excavations less than 5 feet deep through the various clayey soils and shales, it is expected that near vertical excavation walls will be possible. However, in the case that excavations occur through soft clays, granular soils, non-compacted fill, or submerged soils, it will be necessary to either slope the excavation sidewalls or provide temporary bracing to control excavation wall instability. In addition, for excavations deeper than 5 feet, the excavation sidewalls must be sloped or temporary bracing must be provided, regardless of the soil conditions encountered.

If open trench cuts are performed within 1.25 times the trench depth of any surface structure, trench shoring (not trench boxes) should be used within open trench cuts performed within this distance. Hydraulic shoring struts should be used and installed during excavation as needed to provide full lateral support to vertical trench sidewalls, and thereby help reduce lateral ground movements near existing structures. A pre-construction condition survey should be performed prior to beginning excavation near any structure that could be affected by the trench excavation to verify existing conditions (existing distress) prior to construction. Construction monitoring should be performed to verify that existing structures are not impacted or damaged by construction operations.

6.3 Trench Dewatering

As discussed in Section 3.2, Groundwater Observations, groundwater conditions can vary with seasonal fluctuations in rainfall. In the case that groundwater is encountered, controlling the groundwater is essential to construction of the utility lines. Failure to control any encountered groundwater could result in trench wall collapse, trench bottom heave, an unstable trench bottom and detrimental pipeline settlement and pipe deflections after backfilling. Groundwater levels should be maintained at two feet below the base of the excavation for the full term of construction. Protection of the open excavations should be provided during periods of moderate to heavy rainfall, as surface water will most likely channel and collect in the excavations. The water level should be lowered prior to excavating and should be maintained at this lowered level until the pipe trench is backfilled. If water infiltration rates are high, it may be necessary to install a more elaborate dewatering system. The design of any dewatering system required is the contractor's responsibility.

6.4 Soft Trench Bottom Conditions

Soft trench bottom conditions are unlikely where the trench bottom is situated in the natural clay soils or shales. Control of groundwater as discussed above is the key to avoiding an unstable trench bottom. Unstable trench bottoms are unsuitable for support of the proposed pipelines. Soft clays could occur where groundwater is present. In areas where unsuitable bearing materials are encountered at the planned invert elevation, the trench bottom can be prepared using the following method:

- Under-cut to a suitable bearing subgrade and replace it with a structural compacted fill. The over-excavation should extend laterally a distance of at least 1 foot beyond the edges of the pipe, and then at least 1 foot laterally for every 1.5 feet of fill required beneath the pipe. The over-excavation backfill should be surrounded with a geotextile consisting of Mirafi 140N, Amoco ProPex 4545, or equivalent. The backfill should consist of a free-draining aggregate (i.e., sands, gravels, crushed limestone, or crushed concrete) approved by the geotechnical engineer. The backfill should be placed in maximum 9-inch loose lifts and uniformly compacted to a minimum relative density of 65 percent as determined by test methods ASTM D4253 and D4254.

6.5 Pipe Installation Bedding

To assure adequate base support for the pipe, it is recommended that bedding/embedment material be placed around the pipe, 6 inches below the pipe, and 12 inches above the pipe. If concern exists of native backfill above the embedment migrating into the coarser embedment (and causing backfill settlement), a filter cloth is recommended at the embedment/native soil interface. The filter cloth should cover the entire interface and up through the sidewall a minimum of 1 foot.

Bedding material may consist of gravel/stone from 1" to No. 10 sieve size. Gravel should be consolidated upon placement by rodding or pneumatic vibration methods. Such methods should not cause harm or distress to the pipe. The filter cloth should be TenCate Geosynthetics Mirafi 140N or equivalent.

6.6 Trench Backfill

Site excavated materials are generally considered suitable for use as backfill above the pipe bedding materials. All trench backfill should be free of deleterious materials. Use of rock fragments greater than 4 inches in any dimension should be prohibited, since attaining a uniform moisture and density without voids would be difficult. Backfill should be compacted in maximum 9-inch loose lifts at a minimum of 95 percent of the Standard Proctor density (ASTM D698). The uncompacted lift thickness should be reduced to 4 inches for structure backfill zones requiring hand-operated power compactors or small self-propelled compactors.

Clay soils having a PI greater than 20 should be compacted at a moisture content ranging from 0 to +4 percentage points above the optimum moisture content. Granular soils having a PI less than 20 should be compacted at a moisture content ranging from -3 to +3 percentage points of the optimum moisture content. Jetting to compact the pipe backfill should not be allowed. In areas where settlement of the backfill must be closely controlled, the trench excavation should be backfilled with either cement stabilized sand or flowable concrete having a 28-day compressive strength ranging between 50 and 200 psi.

6.7 Trench Backfill Settlement

Settlement of the backfill soils should be anticipated. It is anticipated that properly compacted on-site clay fill soils will settle between about 1 and 2 percent of the fill thickness. For example, 10 feet of fill would be expected to settle on the order of 1.2 to 2.4 inches.

Where possible the trench backfill could be over-built in order to reduce the potential for a surface depression along the trench centerline. We recommend the backfill be crowned. The centerline of the excavation should be over-built by one foot and sloped down to match grade at the edge of the excavation.

6.8 Provisions to Reduce Backfill Settlement

Field testing will be a critical element in controlling the compaction of the backfill to limit settlement. All trench backfilling in these critical areas shall include full-time observation of soil compaction by an experienced geotechnician under the supervision of the geotechnical engineer. The contractor should provide protection for the testing/inspection personnel while working in the trenches and shall move the protective shield/shoring such that areas to be tested are readily accessible. The compacted moisture/density of all backfill soils should be tested at a rate of one test per 250 linear feet of trench, for each lift of fill placed, during compaction. Digging through existing lifts of backfill to access and test underlying lifts should not be allowed.

In addition, to limit settlement, where crushed stone materials are used as pipe bedding materials, they should be topped with a suitable geotextile to limit the intrusion of fines into the crushed stone material as previously discussed.

7.0 EARTHWORK

7.1 Site Preparation

The subgrade should be firm and able to support the construction equipment without displacement. Soft or yielding subgrade should be corrected and made stable before construction proceeds. The subgrade should be proof rolled to detect soft spots, which if exist, should be reworked to provide a firm and otherwise suitable subgrade. Proof rolling should be performed using a heavy pneumatic tired roller, loaded dump truck, or similar piece of equipment. The proof rolling operations should be observed by the project geotechnical engineer or his/her representative.

7.2 Placement and Compaction

Fill material should be placed in loose lifts not exceeding 8 inches in uncompacted thickness. The uncompacted lift thickness should be reduced to 4 inches for structure backfill zones requiring hand-

operated power compactors or small self-propelled compactors. The fill material should be uniform with respect to material type and moisture content. Clods and chunks of material should be broken down and the fill material mixed by disking, blading, or plowing, as necessary, so that a material of uniform moisture and density is obtained for each lift. Water required for sprinkling to bring the fill material to the proper moisture content should be applied evenly through each layer.

The on-site soils are suitable for use in general site grading. Imported fill material should be clean soil with a Liquid Limit less than 60 and no rock greater than 4 inches in maximum dimension. The fill materials should be free of vegetation and debris.

The fill material should be compacted to a density ranging from 95 to 100 percent of maximum dry density as determined by ASTM D698, Standard Proctor. In conjunction with the compacting operation, the fill material should be brought to the proper moisture content. The moisture content for general earth fill should range from 2 percentage points below optimum to 5 percentage points above optimum (-2 to +5). These ranges of moisture contents are given as maximum recommended ranges. For some soils and under some conditions, the contractor may have to maintain a more narrow range of moisture content (within the recommended range) in order to consistently achieve the recommended density.

Field density tests should be taken as each lift of fill material is placed. As a guide, one field density test per lift for each 5,000 square feet of compacted area is recommended. For small areas or critical areas the frequency of testing may need to be increased to one test per 2,500 square feet. A minimum of 2 tests per lift should be required. The earthwork operations should be observed and tested on a continuing basis by an experienced geotechnician working in conjunction with the project geotechnical engineer.

Each lift should be compacted, tested, and approved before another lift is added. The purpose of the field density tests is to provide some indication that uniform and adequate compaction is being obtained. The actual quality of the fill, as compacted, should be the responsibility of the contractor and satisfactory results from the tests should not be considered as a guarantee of the quality of the contractor's filling operations.

If fill is to be placed on existing slopes that are steeper than five horizontal to one vertical, then the fill materials should be benched into the existing slopes in such a manner as to provide a good contact between the two materials and allow relatively horizontal lift placement.

Permanent slopes at the site should be as flat as practical to reduce creep and occurrence of shallow slides. The following slope angles are recommended as maximums. The angles refer to the total height of a slope. Site improvement should be maintained away from the top of the slope to reduce the possibility of damage due to creep or shallow slides.

TABLE 7.2-1 Maximum Permanent Slope Angles	
Height (ft.)	Horizontal to Vertical
0 – 3	1:1
3 – 6	2:1
6 – 9	3:1
> 9	4:1

The above angles refer to the total height of a slope. Site improvement should be maintained away from the top of the slope to reduce the possibility of damage due to creep or shallow slides.

7.3 Trench Backfill

Trench backfill for pipelines or other utilities should be properly placed and compacted. Overly dense or dry backfill can swell and create a mound along the completed trench line. Loose or wet backfill can settle and form a depression along the completed trench line. Distress to overlying structures, pavements, etc. is likely if heaving or settlement occurs. On-site soil fill material is recommended for trench backfill. Care should be taken not to use free draining granular material, to prevent the backfilled trench from becoming a french drain and piping surface or subsurface water beneath structures, pipelines, or pavements. If a higher class bedding material is required for the pipelines, a lean concrete bedding will limit water intrusion into the trench and will not require compaction after placement. The soil backfill should be placed in approximately 4- to 6-inch loose lifts. The density and moisture content should be as recommended for fill in Section 7.2, Placement and Compaction, of this report. A minimum of one field density test should be taken per lift for each 150 linear feet of trench, with a minimum of 2 tests per lift.

7.4 Excavation

The side slopes of excavations through the overburden soils should be made in such a manner to provide for their stability during construction. Existing structures, pipelines or other facilities, which are constructed prior to or during the currently proposed construction and which require excavation, should be protected from loss of end bearing or lateral support.

Temporary construction slopes and/or permanent embankment slopes should be protected from surface runoff water. Site grading should be designed to allow drainage at planned areas where erosion protection is provided, instead of allowing surface water to flow down unprotected slopes.

Trench safety recommendations are beyond the scope of this report. The contractor must comply with all applicable safety regulations concerning trench safety and excavations including, but not limited to, OSHA regulations.

7.5 Acceptance of Imported Fill

Any soil imported from off-site sources should be tested for compliance with the recommendations for the particular application and approved by the project geotechnical engineer prior to the materials being used. The owner should also require the contractor to obtain a written, notarized certification from the landowner of each proposed off-site soil borrow source stating that to the best of the landowner's knowledge and belief there has never been contamination of the borrow source site with hazardous or toxic materials. The certification should be furnished to the owner prior to proceeding to furnish soils to the site. Soil materials derived from the excavation of underground petroleum storage tanks should not be used as fill on this project.

7.6 Soil Corrosion Potential

Specific testing for soil corrosion potential was not included in the scope of this study. However, based upon past experience on other projects in the vicinity, the soils at this site may be corrosive. Standard construction practices for protecting metal pipe and similar facilities in contact with these soils should be used.

7.7 Erosion and Sediment Control

All disturbed areas should be protected from erosion and sedimentation during construction, and all permanent slopes and other areas subject to erosion or sedimentation should be provided with

permanent erosion and sediment control facilities. All applicable ordinances and codes regarding erosion and sediment control should be followed.

8.0 CONSTRUCTION OBSERVATIONS

In any geotechnical investigation, the design recommendations are based on a limited amount of information about the subsurface conditions. In the analysis, the geotechnical engineer must assume the subsurface conditions are similar to the conditions encountered in the borings. However, quite often during construction anomalies in the subsurface conditions are revealed. Therefore, it is recommended that CMJ Engineering, Inc. be retained to observe earthwork and foundation installation and perform materials evaluation during the construction phase of the project. This enables the geotechnical engineer to stay abreast of the project and to be readily available to evaluate unanticipated conditions, to conduct additional tests if required and, when necessary, to recommend alternative solutions to unanticipated conditions. Until these construction phase services are performed by the project geotechnical engineer, the recommendations contained in this report on such items as final foundation bearing elevations, proper soil moisture condition, and other such subsurface related recommendations should be considered as preliminary.

It is proposed that construction phase observation and materials testing commence by the project geotechnical engineer at the outset of the project. Experience has shown that the most suitable method for procuring these services is for the owner or the owner's design engineers to contract directly with the project geotechnical engineer. This results in a clear, direct line of communication between the owner and the owner's design engineers and the geotechnical engineer.

9.0 REPORT CLOSURE

The borings for this study were selected by CMJ Engineering, Inc. The locations and elevations of the borings should be considered accurate only to the degree implied by the methods used in their determination. The boring logs shown in this report contain information related to the types of soil encountered at specific locations and times and show lines delineating the interface between these materials. The logs also contains our field representative's interpretation of conditions that are believed to exist in those depth intervals between the actual samples taken. Therefore, the boring logs contain both factual and interpretive information. Laboratory soil classification tests were also performed on samples from selected depths in the borings. The results of these tests, along with

visual-manual procedures were used to generally classify each stratum. Therefore, it should be understood that the classification data on the logs of borings represent visual estimates of classifications for those portions of each stratum on which the full range of laboratory soil classification tests were not performed. It is not implied that the logs are representative of subsurface conditions at other locations and times.

With regard to groundwater conditions, this report presents data on groundwater levels as they were observed during the course of the field work. In particular, water level readings have been made in the borings at the times and under conditions stated in the text of the report and on the boring logs. It should be noted that fluctuations in the level of the groundwater table can occur with passage of time due to variations in rainfall, temperature and other factors. Also, this report does not include quantitative information on rates of flow of ground water into excavations, on pumping capacities necessary to dewater the excavations, or on methods of dewatering excavations. Unanticipated soil conditions at a construction site are commonly encountered and cannot be fully predicted by mere soil samples, test borings or test pits. Such unexpected conditions frequently require that additional expenditures be made by the owner to attain a properly designed and constructed project. Therefore, provision for some contingency fund is recommended to accommodate such potential extra cost.

The analyses, conclusions and recommendations contained in this report are based on site conditions as they existed at the time of our field investigation and further on the assumption that the exploratory borings are representative of the subsurface conditions throughout the site; that is, the subsurface conditions everywhere are not significantly different from those disclosed by the borings at the time they were completed. If, during construction, different subsurface conditions from those encountered in our borings are observed, or appear to be present in excavations, we must be advised promptly so that we can review these conditions and reconsider our recommendations where necessary. If there is a substantial lapse of time between submission of this report and the start of the work at the site, if conditions have changed due either to natural causes or to construction operations at or adjacent to the site, or if structure locations, structural loads or finish grades are changed, we urge that we be promptly informed and retained to review our report to determine the applicability of the conclusions and recommendations, considering the changed conditions and/or time lapse.

Further, it is urged that CMJ Engineering, Inc. be retained to review those portions of the plans and specifications for this particular project that pertain to earthwork and foundations as a means to determine whether the plans and specifications are consistent with the recommendations contained in this report. In addition, we are available to observe construction, particularly the compaction of structural fill, or backfill and the construction of foundations as recommended in the report, and such other field observations as might be necessary.

The scope of our services did not include any environmental assessment or investigation for the presence or absence of wetlands or hazardous or toxic materials in the soil, surface water, ground water or air, on or below or around the site.

This report has been prepared for use in developing an overall design concept. Paragraphs, statements, test results, boring logs, diagrams, etc. should not be taken out of context, nor utilized without a knowledge and awareness of their intent within the overall concept of this report. The reproduction of this report, or any part thereof, supplied to persons other than the owner, should indicate that this study was made for design purposes only and that verification of the subsurface conditions for purposes of determining difficulty of excavation, trafficability, etc. are responsibilities of the contractor.

This report has been prepared for the exclusive use of Kimley Horn & Associates, Inc. for specific application to design of this project. The only warranty made by us in connection with the services provided is that we have used that degree of care and skill ordinarily exercised under similar conditions by reputable members of our profession practicing in the same or similar locality. No other warranty, expressed or implied, is made or intended.

* * * *



CMJ

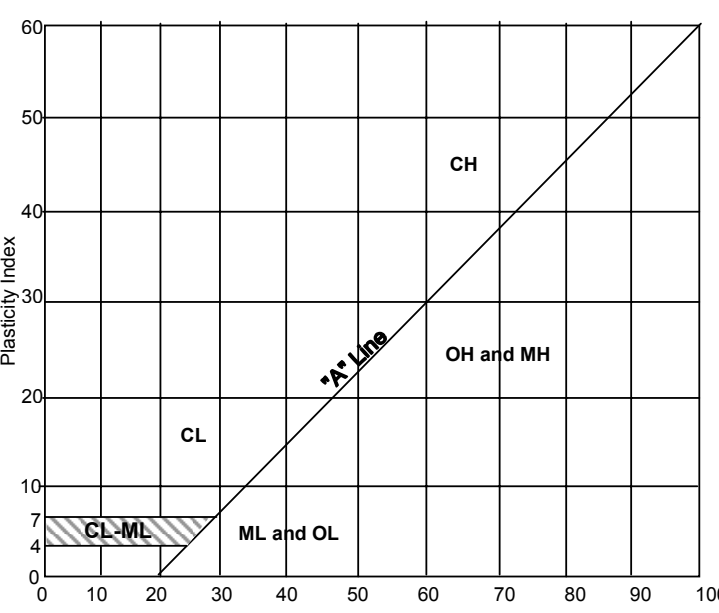
Engineering

CMJ Project No. 103-24-553

PLAN OF BORINGS

North Lakeshore Drive Reconstruction
Rockwall, Texas

Plate
A.1

Major Divisions			Grp. Sym.	Typical Names	Laboratory Classification Criteria				
Coarse-grained soils (more than half of the material is larger than No. 200 sieve size)	Gravels (More than half of coarse fraction is larger than No. 4 sieve size)	Clean gravels (Little or no fines)	GW	Well-graded gravels, gravel-sand mixtures, little or no fines	Determine percentages of sand and gravel from grain size curve. Depending on percentage of fines (fraction smaller than No. 200 sieve size), coarse-grained soils are classified as follows: Less than 5 percent.....GW, GP, SW, SP More than 12 percent.....GM, GC, SM, SC 5 to 12 percent.....Borderline cases requiring dual symbols	$C_u = \frac{D_{60}}{D_{10}}$ greater than 4: $C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ between 1 and 3			
			GP	Poorly graded gravels, gravel-sand mixtures, little or no fines		Not meeting all gradation requirements for GW			
		Gravels with fines (Appreciable amount of fines)	GM	Silty gravels, gravel-sand-silt mixtures		Liquid and Plastic limits below "A" line or P.I. greater than 4	Liquid and plastic limits plotting in hatched zone between 4 and 7 are borderline cases requiring use of dual symbols		
			GC	Clayey gravels, gravel-sand-clay mixtures					
	Sands (More than half of coarse fraction is smaller than No. 4 sieve size)	Clean sands (Little or no fines)	SW	Well-graded sands, gravelly sands, little or no fines		$C_u = \frac{D_{60}}{D_{10}}$ greater than 6: $C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ between 1 and 3			
			SP	Poorly graded sands; gravelly sands, little or no fines		Not meeting all gradation requirements for SW			
		Sands with fines (Appreciable amount of fines)	SM	Silty sands, sand-silt mixtures		Liquid and Plastic limits below "A" line or P.I. less than 4	Liquid and plastic limits plotting between 4 and 7 are borderline cases requiring use of dual symbols		
			SC	Clayey sands, sand-clay mixtures					
		Fine-grained soils (More than half of material is smaller than No. 200 sieve)	Silts and clays (Liquid limit less than 50)	ML		Inorganic silts and very fine sands, rock flour, silty or clayey fine sands, or clayey silts with slight plasticity			
				CL		Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, and lean clays			
OL	Organic silts and organic silty clays of low plasticity								
Silts and clays (Liquid limit greater than 50)	MH		Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts						
	CH		Inorganic clays of high plasticity, fat clays						
	OH		Organic clays of medium to high plasticity, organic silts						
Highly Organic soils	Pt		Peat and other highly organic soils						

Plasticity Chart

UNIFIED SOIL CLASSIFICATION SYSTEM

PLATE A.2

SOIL OR ROCK TYPES											
	GRAVEL		LEAN CLAY		LIMESTONE						
	SAND		SANDY		SHALE						
	SILT		SILTY		SANDSTONE						
	HIGHLY PLASTIC CLAY		CLAYEY		CONGLOMERATE	Shelby Tube	Auger	Split Spoon	Rock Core	Cone Pen	No Recovery
TERMS DESCRIBING CONSISTENCY, CONDITION, AND STRUCTURE OF SOIL											
Fine Grained Soils (More than 50% Passing No. 200 Sieve)											
Descriptive Item		Penetrometer Reading, (tsf)									
Soft		0.0 to 1.0									
Firm		1.0 to 1.5									
Stiff		1.5 to 3.0									
Very Stiff		3.0 to 4.5									
Hard		4.5+									
Coarse Grained Soils (More than 50% Retained on No. 200 Sieve)											
Penetration Resistance		Descriptive Item				Relative Density					
(blows/foot)											
0 to 4		Very Loose				0 to 20%					
4 to 10		Loose				20 to 40%					
10 to 30		Medium Dense				40 to 70%					
30 to 50		Dense				70 to 90%					
Over 50		Very Dense				90 to 100%					
Soil Structure											
Calcareous		Contains appreciable deposits of calcium carbonate; generally nodular									
Slickensided		Having inclined planes of weakness that are slick and glossy in appearance									
Laminated		Composed of thin layers of varying color or texture									
Fissured		Containing cracks, sometimes filled with fine sand or silt									
Interbedded		Composed of alternate layers of different soil types, usually in approximately equal proportions									
TERMS DESCRIBING PHYSICAL PROPERTIES OF ROCK											
Hardness and Degree of Cementation											
Very Soft or Plastic		Can be remolded in hand; corresponds in consistency up to very stiff in soils									
Soft		Can be scratched with fingernail									
Moderately Hard		Can be scratched easily with knife; cannot be scratched with fingernail									
Hard		Difficult to scratch with knife									
Very Hard		Cannot be scratched with knife									
Poorly Cemented or Friable		Easily crumbled									
Cemented		Bound together by chemically precipitated material; Quartz, calcite, dolomite, siderite, and iron oxide are common cementing materials.									
Degree of Weathering											
Unweathered		Rock in its natural state before being exposed to atmospheric agents									
Slightly Weathered		Noted predominantly by color change with no disintegrated zones									
Weathered		Complete color change with zones of slightly decomposed rock									
Extremely Weathered		Complete color change with consistency, texture, and general appearance approaching soil									
KEY TO CLASSIFICATION AND SYMBOLS										PLATE A.3	

Project No. 103-24-553		Boring No. B-1		Project N. Lakeshore Drive Reconstruction Rockwall, Texas											
Location See Plate A.1				Water Observations Dry during drilling; dry at completion											
Completion Depth 10.0'		Completion Date 9-9-24													
Surface Elevation		Type CME-55 w/ CFA													
Depth, Ft.	Symbol	Samples	Stratum Description		REC %	RQD %	Blows/Ft. or Pen Reading, T.S.F.	Passing No 200 Sieve, %	Liquid Limit, %	Plastic Limit, %	Plasticity Index	Moisture Content, %	Unit Dry Wt. Lbs./Cu. Ft.	Unconfined Compression Pounds/Sq. Ft.	
			<u>CONCRETE</u> , 8 inches thick												
			<u>CLAY</u> , light brown and gray, w/ iron stains, limestone fragments, ironstone nodules, and pebbles, hard - lime-treatment detected above 2'				4.5+					24			
							4.5+		53	20	33	22			
5							4.5+					20			
			<u>CLAYEY SHALE</u> , gray, soft				4.5+					16			
			<u>SHALE</u> , gray, moderately hard												
10							100/3.75"								

LOG OF BORING 103-24-553.GPJ CMJ.GDT 10/11/24

LOG OF BORING NO. **B-1****PLATE A.4**

Project No. 103-24-553		Boring No. B-3		Project N. Lakeshore Drive Reconstruction Rockwall, Texas									
Location See Plate A.1				Water Observations Dry during drilling; dry at completion									
Completion Depth 10.0'		Completion Date 9-9-24											
Surface Elevation		Type CME-55 w/ CFA											
Depth, Ft.	Symbol	Samples	Stratum Description	REC %	RQD %	Blows/Ft. or Pen Reading, T.S.F.	Passing No 200 Sieve, %	Liquid Limit, %	Plastic Limit, %	Plasticity Index	Moisture Content, %	Unit Dry Wt. Lbs./Cu. Ft.	Unconfined Compression Pounds/Sq. Ft.
			<u>CONCRETE</u> , 7.75 inches thick										
			<u>SILTY CLAY</u> , light brown, w/ iron seams, ironstone nodules, calcareous nodules, and pebbles, hard (FILL)			4.5+		48	19	29	17		
			<u>SILTY CLAY</u> , brown w/ iron seams, ironstone nodules, and pebbles, very stiff to hard			4.5+					23		
5						4.5+					18		
			- w/ calcareous nodules below 6'			4.5+					17		
						4.0					18	112	8260
10													

LOG OF BORING 103-24-553.GPJ CMJ.GDT 10/11/24

LOG OF BORING NO. **B-3****PLATE A.6**

Project No. 103-24-553		Boring No. B-10		Project N. Lakeshore Drive Reconstruction Rockwall, Texas												
Location See Plate A.1				Water Observations Dry during drilling; dry at completion												
Completion Depth 10.0'		Completion Date 9-9-24														
Depth, Ft.	Symbol	Samples	Surface Elevation		Type CME-55 w/ CFA		REC %	RQD %	Blows/Ft. or Pen Reading, T.S.F.	Passing No 200 Sieve, %	Liquid Limit, %	Plastic Limit, %	Plasticity Index	Moisture Content, %	Unit Dry Wt. Lbs./Cu. Ft.	Unconfined Compression Pounds/Sq. Ft.
			Stratum Description													
					<u>CONCRETE</u> , 7 inches thick											
					<u>CLAY</u> , dark brown, w/ iron seams, ironstone nodules, and pebbles, hard - lime-treatment detected above 2'				4.5+		55	23	32	26		
					<u>SILTY CLAY</u> , brown, w/ iron seams, ironstone nodules, and pebbles, very stiff to hard				4.5+					20		
5									4.5+					19		
									3.75					20	108	7670
									4.0					20		
10																

Project No. 103-24-553		Boring No. B-14		Project N. Lakeshore Drive Reconstruction Rockwall, Texas										
Location See Plate A.1				Water Observations Dry during drilling; dry at completion										
Completion Depth 10.0'		Completion Date 9-9-24												
Surface Elevation		Type CME-55 w/ CFA												
Depth, Ft.	Symbol	Samples	Stratum Description		REC %	RQD %	Blows/Ft. or Pen Reading, T.S.F.	Passing No 200 Sieve, %	Liquid Limit, %	Plastic Limit, %	Plasticity Index	Moisture Content, %	Unit Dry Wt. Lbs./Cu. Ft.	Unconfined Compression Pounds/Sq. Ft.
			<u>CONCRETE</u> , 4.75 inches thick				4.25					23	103	6290
			<u>SILTY CLAY</u> , dark brown, w/ iron seams, ironstone nodules, and pebbles, very stiff to hard				4.5+					19		
			<u>SILTY CLAY/CLAY</u> , light brown, w/ iron seams, ironstone nodules, calcareous nodules, and pebbles, very stiff to hard				4.5+					17		
5							4.5+		50	16	34	18		
							4.0					19		
10														

LOG OF BORING 103-24-553.GPJ CMJ.GDT 10/11/24

LOG OF BORING NO. **B-14****PLATE A.17**

LIME SERIES TEST RESULTS

Project: N. Lakeshore Drive Reconstruction
Rockwall, Texas

Project No.: 103-24-553

Boring No.: B-3	Depth: 7 $\frac{3}{4}$ " – 2'
Material: Silty Clay	
Percent Lime	pH
0	8.55
2	12.42
4	12.49
6	12.50
8	12.53
10	12.54

Boring No.: B-8	Depth: 7 $\frac{3}{4}$ " – 2'
Material: Clay	
Percent Lime	pH
0	8.92
2	12.43
4	12.50
6	12.50
8	12.51
10	12.54

LIME SERIES TEST RESULTS

Project: N. Lakeshore Drive Reconstruction
Rockwall, Texas

Project No.: 103-24-553

Boring No.: B-13	Depth: 6 ³ / ₄ " – 2'
Material: Silty Clay	
Percent Lime	pH
0	8.57
2	12.41
4	12.50
6	12.52
8	12.53
10	12.55

SOLUBLE SULFATE TEST RESULTS

PROJECT: N. Lakeshore Drive Reconstruction
Rockwall, Texas

PROJECT NO.: 103-24-553

Boring No.	Depth (ft.)	Material	Soluble Sulfates (ppm)
B-1	8" – 2'	Clay	<100
B-2	8" – 2'	Clay	<100
B-3	2 – 4	Silty Clay	<100
B-4	2 – 4	Silty Clay	<100
B-5	7 ³ / ₄ " – 2'	Clay	<100
B-6	8" – 2'	Clay	<100
B-7	2 – 4	Silty Clay	<100
B-8	2 – 4	Clay	<100
B-9	6 ³ / ₄ " – 2'	Clay	<100
B-10	7" – 2'	Clay	<100
B-11	6" – 2'	Clay	<100
B-12	7 ¹ / ₂ " – 2'	Silty Clay	<100
B-13	2 – 4	Silty Clay	<100
B-14	2 – 4	Silty Clay	<100
B-15	2 – 4	Clay	<100

Note: Test Method TxDOT Tex 145-E.